CHEMICAL MARKETS

VOLUME XXIV ESTABLISHED 1914 NUMBER 2

Contents for February, 1929

Editorials 131
Work for the President-Elect—Mergers, Then and Now—Tariff Prospectives —A Year's Record

Waste and Inefficiency in the Government's Chemical Work 135
By Harvey W. Wiley

Revising Chemical Tariff Schedules by Debate 139
By Williams Haynes

The Waxes of Industry 141
By James R. Sanderson

Chlorine in the Fields of Sanitation 145
By L. H. Enslow

How the Mont-Cenis Process Produces Synthetic Ammonia 148
By Rudolph Battig

What will Hoover do with the Prohibition Problem ? 151
By H. C. Hallam

Caustic and Chlorine on the Pacific Coast 154

The World-wide Search for Potash Supplies 157
A Staff Review

Financing Chemical Developments 161
By John Morris Weiss

Are Present Cylinder Test Regulations Practicable ? 169
By Glen D. Bagley

Quotation Marks	134	Trend of Prices	193
Who's Who	159	Prices Current	194
Industry's Bookshelf	153	Local Market Reports	218
News Section	177	Chemical Market Place	221
Financial Markets	187	Index to Advertising	222

Consulting Editors:

ROBERT T. BALDWIN
BENJAMIN T. BROOKS
CHARLES R. DOWNS
WILLIAM M. GROSVENOR
ARTHUR D. LITTLE
CHARLES H. MACDOWELL
JOHN E. TEEPLE
T. B. WAGNER
MILTON C. WHITAKER
FRANK C. WHITMORE

WILLIAMS HAYNES
Editor and Publisher

ELMER F. SHEETS
Managing Editor

WILLIAM F. GEORGE
Advertising Manager

CHEMICAL MARKETS, INC., Publishers
Publication Office, 28 Renne Ave., Pittsfield, Mass. Editorial and General Office, 25 Spruce St. New York City
WILLIAMS HAYNES, PRESIDENT; ROBERT STRANGE, SECRETARY; D. O. HAYNES, JR., TREASURER

PUBLISHED ON THE TENTH DAY OF EACH MONTH AT PITTSFIELD, MASS. SUBSCRIPTION TWO DOLLARS A YEAR, IN ADVANCE, POSTPAID TO ALL COUNTRIES; SINGLE COPIES, CURRENT ISSUE, 25 CENTS; BACK COPIES, 50 CENTS EACH. NOTICE OF THREE WEEKS IS NECESSARY TO CHANGE SUBSCRIBER'S ADDRESS AND IN WRITING PLEASE GIVE BOTH THE OLD AND NEW ADDRESSES. PRINTED FOR THE PUBLISHERS BY THE SUN PRINTING COMPANY, PITTSFIELD, MASS. ENTERED AS SECOND CLASS MATTER, JANUARY 1, 1928 AT THE POST OFFICE AT PITTSFIELD, MASS., UNDER THE ACT OF MARCH 3, 1879.

CONTENTS COPYRIGHTED, 1929, BY CHEMICAL MARKETS, INC.

CHEMICAL MARKETS

VOLUME XXIV ESTABLISHED 1914 NUMBER 2

Contents for February, 1929

Editorials 131
Work for the President-Elect—Mergers, Then and Now—Tariff Prospectives —A Year's Record

Waste and Inefficiency in the Government's Chemical Work 135
By Harvey W. Wiley

Revising Chemical Tariff Schedules by Debate 139
By Williams Haynes

The Waxes of Industry 141
By James R. Sanderson

Chlorine in the Fields of Sanitation 145
By L. H. Enslow

How the Mont-Cenis Process Produces Synthetic Ammonia 148
By Rudolph Battig

What will Hoover do with the Prohibition Problem ? 151
By H. C. Hallam

Caustic and Chlorine on the Pacific Coast 154

The World-wide Search for Potash Supplies 157
A Staff Review

Financing Chemical Developments 161
By John Morris Weiss

Are Present Cylinder Test Regulations Practicable ? 169
By Glen D. Bagley

Quotation Marks	134	Trend of Prices	193
Who's Who	159	Prices Current	194
Industry's Bookshelf	153	Local Market Reports	218
News Section	177	Chemical Market Place	221
Financial Markets	187	Index to Advertising	222

Consulting Editors:

ROBERT T. BALDWIN
BENJAMIN T. BROOKS
CHARLES R. DOWNS
WILLIAM M. GROSVENOR
ARTHUR D. LITTLE
CHARLES H. MACDOWELL
JOHN E. TEEPLE
T. B. WAGNER
MILTON C. WHITAKER
FRANK C. WHITMORE

WILLIAMS HAYNES
Editor and Publisher

ELMER F. SHEETS
Managing Editor

WILLIAM F. GEORGE
Advertising Manager

CHEMICAL MARKETS, INC., Publishers
Publication Office, 28 Renne Ave., Pittsfield, Mass. Editorial and General Office, 25 Spruce St. New York City
WILLIAMS HAYNES, PRESIDENT; ROBERT STRANGE, SECRETARY; D. O. HAYNES, JR., TREASURER

PUBLISHED ON THE TENTH DAY OF EACH MONTH AT PITTSFIELD, MASS. SUBSCRIPTION TWO DOLLARS A YEAR, IN ADVANCE, POSTPAID TO ALL COUNTRIES; SINGLE COPIES, CURRENT ISSUE, 25 CENTS; BACK COPIES, 50 CENTS EACH. NOTICE OF THREE WEEKS IS NECESSARY TO CHANGE SUBSCRIBER'S ADDRESS AND IN WRITING PLEASE GIVE BOTH THE OLD AND NEW ADDRESSES. PRINTED FOR THE PUBLISHERS BY THE SUN PRINTING COMPANY, PITTSFIELD, MASS. ENTERED AS SECOND CLASS MATTER, JANUARY 1, 1928 AT THE POST OFFICE AT PITTSFIELD, MASS., UNDER THE ACT OF MARCH 3, 1879.

CONTENTS COPYRIGHTED, 1929, BY CHEMICAL MARKETS, INC.

CHEMICAL MARKETS

VOL. XXIV. FEBRUARY, 1929 No. 2.

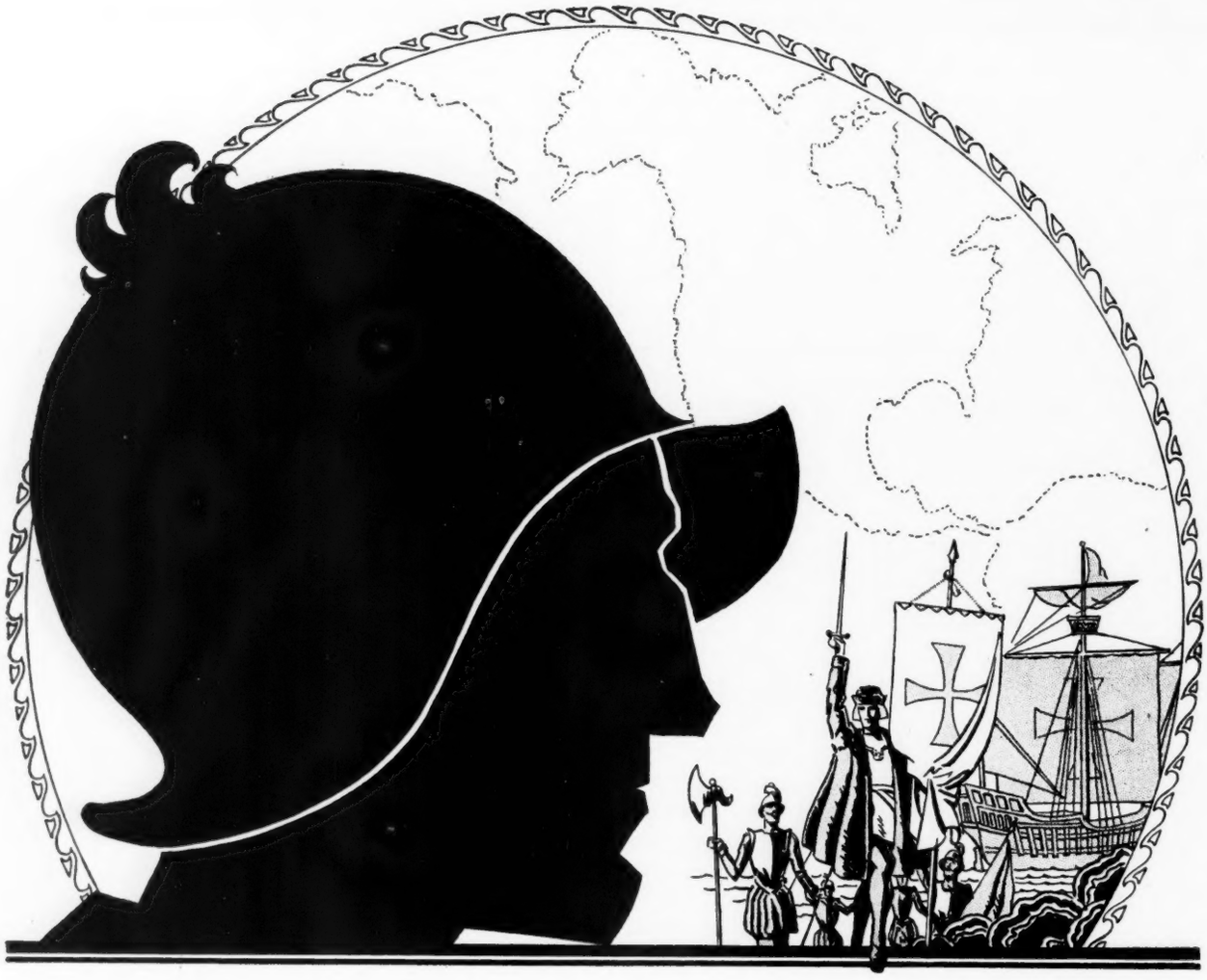
Work For The President-Elect

SOME day in the distant future a Lord Bryce or a Woodrow Wilson writing the history of the times in which we are now living is going to unearth the roots from which have sprung the luxuriant growth of bureaucracy in the executive departments of our government during the decade following the end of the World War. Today all that we can know surely is that this is a very costly, highly inefficient, and distinctly undemocratic development.

THIS splendid crop of weeds, which chokes the fruits of good administration of our public affairs, is nowhere more plentiful than in the government's chemical work. Dr. Wiley has harvested some of these lusty tares, and in this issue spreads them out for our inspection.

MUCH of this work in chemistry is of fundamental and vital importance to the country. If this were not so we might dismiss the wastefulness and inefficiency which result from bureaucratic methods as a bit of pleasantly scientific extravagance. Costly frills —even if they do provide political patronage—have a way of getting cured once they become a real burden on the taxpayer. But important work that needs to be well done and is not efficiently administered is apt to slip by and pile up till in a time of crisis, when it is too late, it proves to be, not a help, but a hindrance. By specific instances, illuminated with personal experiences, Dr. Wiley vividly reveals the division of responsibility and the duplication of effort which arise out of the ceaseless multiplication of bureaus and laboratories. He traces the cause to the personal ambition of energetic government employees which finds a ready ally in the rivalries of the different government departments. In a sequel he will point out some evil effects of this system which directly concern the chemical industry.

ONE of the highest hopes cherished by Mr. Hoover's election is inspired by our confidence that his exceptional powers as an organizer will lead to a curbing of these bureaucratic tendencies by simplifying our executive machinery. If he does so, the historians of the future will write quite a different ending to the chapter we are enacting.



"See American First"

"AMERICAN" applies to the art of producing good Alcohol, all requisites for success.

Every link of personnel and plant has been tested through years of production. Under the direction of men of recognized ability and integrity the products of "American" have established a record for excellence.

To these advantages is added that of an exclusive process, originated in our laboratories. It is an important contribution to the quality of "American" Alcohol.

When you are in the market for strict excellence in Alcohol, "See American First."

THE immortal mariner of Genoa was convinced. The hulls of outgoing vessels were first to drop below the horizon, sails last. The earth was round! Columbus set forth and, landing on San Salvador isle, thought he had justified the faith of the Spanish queen. But, though an incredibly rich land lay in front, the direct route to India was blocked. So Columbus died heartbroken, a victim of kingly ingratitude. Even the continent he discovered bears the name of another.

"SEE AMERICAN FIRST"

COMMERCIAL ALCOHOL CORPORATION

420 Lexington Avenue, New York, N. Y.

Plants:

Pekin, Ill. Philadelphia, Pa. Gretna, La.

Mergers, Then and Now

A third of a century ago, eight manufacturers of heavy chemicals effected the first important, permanent merger in the American chemical industry. For many years they had been slashing at each other's throats in a bitterly fought price war during which no quarter was asked or given. Such a combination of competitors is now quite contrary to the law. In view of this significant fact, it is curiously interesting to compare the methods employed and to contrast the financial set-up of the original General Chemical Company with the mergers of today.

No benevolent banker, seeking to stabilize American industry, first proposed this combination. One of the combatants went to the man in the industry whose position and character naturally nominated him to be the leader and suggested that his competitors would pay him a million dollars provided he could bring them all together. Dr. William H. Nichols rejected the proposition as preposterous, because such services would not be worth such a sum. He promised, however, to consider the matter and agreed to act if he could work out what appeared to his judgment to be a sound and reasonable plan. Soon he made such a proposal, and, with the recently perfected Badische process furnishing added incentive to action, his terms finally won their consent.

All companies were fairly valued upon the bases of their tangible, physical assets, and the General Chemical Company was incorporated with just sufficient capitalization to cover these combined valuations. As a measure of assured conservatism, before the new stock was issued, all agreed to cut their individual valuations twenty per cent. There was no underwriting of the new issue for no stock was offered the public. There were no broker's fees; no banker's bonus; no bonds; no preference shares, no founder's stock. Even most of the numerous attorneys involved were persuaded to accept common stock, out of the twenty per cent. surplus, for their services.

This most economical method of pre-eminently sound financing had for its immediate object the elimination of unfair competition. This purpose has been declared illegal. Assuredly it led to grave abuses; but at least it was straight-forward. It had no ulterior motives—either vertical or horizontal—and it did place a premium upon conservative financial arrangements. So much cannot always be said of the grandiose, legal mergers of today.

Tariff Prospectives

Two forecasts—both favorable in the main to chemical interests—of the spirit in which the work of tariff revision would be undertaken are borne out by the hearings of the House Ways and Means Committee last month. There is to be as little tariff tampering as possible. Farm relief has become the major objective of protection.

The over-praised and over-blamed Fordney-McCumber tariff, under which business has been operating for the past eight years has proved itself a reasonably satisfactory piece of economic legislation. It has been in effect during a very trying period, and it has withstood the severe tests of inflated currency and depreciated labor abroad. By no means has it been the most important contributor to our national prosperity; but as a protective measure it has certainly maintained American wages during a period of external stress and internal strain. Our business having adjusted itself to its rates, it is obviously the better part of Republican politics to disturb this basic factor as little as possible.

National defence has lost its place as the inspiration of schedule fixing to farm relief. This is bound to have some new and possibly some rather startling effects, for it marks a distinct shifting of the very foundations of tariff making. For example, it must be a curious experience for such important industries as paint and soap to find very friendly consideration given to the proposal to put a substantial duty on essential raw materials of theirs, when these raw materials are not produced in sufficient quantities domestically to supply their demands. But imported fatty oils come into direct competition with butter and lard, peanuts and flaxseed!

The atmosphere of the hearings is more judicial and less political than in the past. This does not mean that the Democratic members of the Ways and Means Committee have become thorough-going protectionists; but they are at least reasonably certain that throughout the entire country there is a widespread belief that free trade would be ruinous. In such an atmosphere, the pleader who asks for a reasonable duty, which he is prepared to justify with facts and figures, will be the one who receives the best consideration. Those who testified in the old spirit of asking twice as much duty as they hoped to get frequently fared badly. It will be interesting to see how the Senate Committee reacts to the present political-economic situation. If they follow the lead of the House, there are some chemical briefs that will stand a careful over-hauling.

A Year's Record

Indexes covering the material published in the two volumes of CHEMICAL MARKETS —January to June, XXII, and July to December, XXIII—of the past year are ready for distribution. Even subscribers who do not maintain a complete file of the back numbers of "the Business Magazine of the Chemical Industry" find these indexes convenient, ready reference for the sources of the facts and figures of our current chemical chronicle.

Looking over these indexes as a tangible record of an Editor's accomplishment we have a very pardonable pride in checking off the great chemical executives who have written for our readers. John F. Queeny, John J. Watson, Jasper Crane, Charles H. MacDowell, E. M. Allen, William B. Thom, A. D. Ladoux, August Merz, and from abroad Lord Melchett and Edmond Trepka —to mention only those who are titular heads of great chemical enterprises—have all been among our contributors. Such recognized authorities as George Frederick on cartels, Teeple on financing, Mabey on traffic rates, DeLong on tariff, Cressy Morrison on industrial relations, Brooks on petroleum, Keyes on solvents, Free on research, Thaysen and Lathrop on cellulose, Norman Peterkin on chemical buying; Burnett and Robbins on dealers' problems, Switz on chemical economics, Johnson on sulfur dioxide, French and Haertel on health hazards, Howes on bags and Belding on tank cars, show at once the value and the variety of our pages.

Reviewing thus our own indexes, it is only becoming that we should take the opportunity again to thank the many contributors who have helped make the new CHEMICAL MARKETS all that it has come to mean to its readers. Especially are our thanks due to the group of distinguished chemical industrialists who form our board of Consulting Editors. Individually and collectively, they have given so freely of their time, their experience, and their best judgment that if all might be accurately itemized not only we, but also every reader who finds the magazine valuable, would find ourselves hopelessly in debt to these gentlemen.

Quotation Marks

I do not believe there will be price cutting in the marketing of fertilizer during 1929. During the last seven years, price cutting has existed as a result of overproduction brought about by the war and abnormally low consumption caused by the inability of consumers of fertilizer to pay previous accounts. The dreadful credit position of the farmer was a result of collapse of foodstuff prices in 1921.

Most of this wreckage has been cleared away, consumption has returned to normal and manufacturers are not rushing to dump their goods on limited buyers before competitors get a chance to sell them. The necessity for selling bulk goods to the small dry-mixer at factory cost no longer exists and the large fertilizer companies are handling their business with confidence in their ability to get their tonnage to the consumer at a fair price.—*C. Wilbur Miller.*

If the existing discrepancy between our highly developed natural science and technology, on the one hand, and our archaic institutions and our antiquated views on social, religious and cultural problems, on the other hand, continues and widens, then there is little hope that mankind can survive for long.—*Harry Elmer Barnes.*

It is more important for the young to know the story of helium than to be steeped in the tiresome orations of Cicero.—*Dr. Herbert Levinstein.*

It is one of the most profound and important of exact psychological truths that man in the mass does not think, but only feels.—*Herbert C. Hoover.*

Justice is our most expensive commodity.—*Franklin D. Roosevelt.*

Ten Years Ago

From "Drug and Chemical Markets" February 1919

Thomas A. Edison and H. A. Metz were involved in an interesting controversy regarding the future of the dyestuffs industry in this country. The former feared for the future of the American industry with the renewal of German competition, while the latter believed that the industry would continue to prosper.

Rhodia Chemical Co. was organized with capital of $600,000 by R. Pfister, M. Grillet, and J. Koeschet, to manufacture medicinal chemicals in this country as an American company founded upon methods followed by Societe Chimique des Usines, France.

Chemical Foundation was incorporated at Wilmington, Del., as a holding company for the several thousand German-owned chemical patents which were to be leased to American manufacturers. It was capitalized at $500,000 and it was said that E. I. du Pont de Nemours & Co. and National Aniline and Chemical Co. were among largest stockholders.

Brunner, Mond Co., of Canada, Ltd., completed plant at Amherstburg, Ont., for the manufacture of soda ash by the Solvay process.

Monsanto Chemical Works bid $605,000 at Alien Property Custodian's sale of Heyden Chemical Works at Garfield, N. J. McKesson & Robbins, New York, was the only other active bidder.

Chemical Alliance Foreign Trade Committee was organized to draw plans for formation of an export association within the chemical industry under provisions of the Webb law.

WASTE and INEFFICIENCY

in the Government's Chemical Work Due to Unnecessary Yet Increasing Duplications

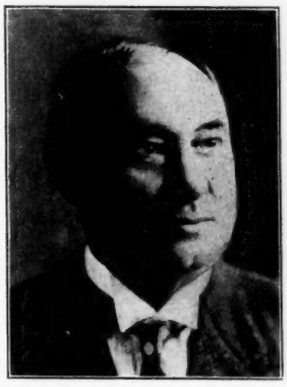
By Harvey W. Wiley

DIVISION and sub-division of the federal Government's Chemical activities, specialization and super-specialization of both research and testing work has continued and still continues.

Granting at the very outset that much of this chemical work is of vital importance, is but to put forward the strongest argument that it should be carried on in the most efficient manner possible. Admitting too, its great practical value to our industries and our agriculture, our national defence, the public health, the weal of all our citizens, do we not at the same time strengthen the plea that it should be done at the least cost possible with the efficiency demanded? Yet both of the sound and sensible objectives are being pushed further and further into the background by the wasteful overlapping and the inefficient duplicating that is promoted by the multiplicity of Departments and Bureaus, of experiment stations and laboratories. This dangerous and costly tendency grows. It feeds upon the personal ambitions of government employees, fertilized liberally by a splendid unconcern for the most economical expenditure of the tax payer's money.

I shall take up as a specific example of wasteful, overlapping chemical work done by the Government only the chemical activities of that branch of the service with which I have been for many years most intimately related, and which I understand the best, namely, chemistry in the Department of Agriculture.

Happily, a leaflet has lately been published which gives a full description in a compact form of the many chemical laboratories in the Department of Agriculture. Attention is called in this leaflet to the certain, the obvious fact that without the assistance of chemistry it is quite possible that modern agriculture would be little ahead of the crop and animal growing practices in use three hundred years ago. Reason enough therefore, for this Department to engage in chemical research: but these activities have been specialized beyond all reason. The following survey of the chemical laboratories found in the Department of Agriculture appalls even the cubby-hole scientist.



For thirty years Chief Chemist of the U. S. Department of Agriculture, organizer of its original Bureau of Chemistry, Father of the Pure Food and Drugs Law, there is no detail of governmental research or regulatory work upon which Dr. Wiley does not discuss from intimate, first-hand knowledge. The staggering cost of the evils he points out is a concern of every taxpayer. The pernicious influence of the Government doing work which is for private benefit—which will be the subject of a following article—concerns every chemical executive.

First, the Bureau of Chemistry and Soils, to which is assigned studies in chemical problems pertaining to agriculture and to industries which utilize agricultural products.

Among the problems which are now under consideration in this Bureau are investigations for the more effective production and utilization of sugar-producing crops. I may say that from the very start almost of the Department of Agriculture in 1862 such sugar studies have been considered quite the most important of any single problem. As far back as the days of Dr. McMurtie in the early 70's investigations of the possible introduction of the sugar-beet were carried on. These were followed by the very extensive investigations of Dr. Collier investigating the possibilities of using sorghum as a source of sugar. When I began my work in Washington in 1883 it was with the distinct understanding that I should continue these investigations and add to them any discoverable improvements in the introduction of the beet-sugar industry and for making the cane sugar industry more profitable. From that day to this there has never been a time when sugars were not under study in the Bureau of Chemistry at Washington.

Other investigations now going on are in crystallography, dust explosions and farm fires, dyes intended to be used for coloring foods, industrial wastes, farm wastes, fermentations, food research, fruit and vegetable chemistry, heavy metals in foods, microbiological investigations, food microscopy, insecti-

cides, leather and tanning investigations, naval stores, investigations of oils, fats and waxes, paper investigations, studies of proteins and nutrition, water-proofing and preserving fabrics, fertilizer and fixed nitrogen investigations, soil investigations, soil survey, milling and baking studies, farm storage and special laboratory investigations of many and sundry technical problems.

Of these investigations those that have caused the greatest amount of criticism are the so-called soil surveys. They are the only investigations which seem to be thoroughly divorced from sound scientific bases. Formerly the Bureau of Chemistry did all the police work for the execution of the Food and Drugs Act. This activity now has been transferred to another laboratory, although the workers are still in the Bureau of Chemistry and Soils and under the direction of the regulatory unit head, namely, W. G. Campbell. The curious juxtaposition is offered of extensive chemical activities under the practical direction of Mr. Campbell, but really under the control of a chemist, Paul Dunbar.

Bureau of Animal Industry

An extensive chemical laboratory is attached to the Bureau of Animal Industry. Chemistry plays a part in practically all the varied activities of animal husbandry in connection with this Bureau's extensive control work in the fields of meat inspection, tick eradication, scabies eradication, and tuberculosis eradication. Chemists are employed and laboratories are maintained for the purpose of insuring the purity of meat and the purity and potency of viruses and anti-toxins prepared under Federal inspection. The chemistry and nutritive value of various meats and meat products are studied. Chemical studies in animal nutrition involving studies in the effect of food, not only on animals but on animal products are extensively pursued. Chemical and bacteriological studies of dips and disinfectants are made with the idea of improving these articles and making them more effective.

But similar studies of many of these are made in the Bureau of Chemistry and Soils. And here there is a very great deal of over-lapping investigations practiced.

Bureau of Dairying

Until a very short time ago dairying was a division of the Bureau of Animal Industry. I have never been sufficiently astute to understand why dairying was set off as a Bureau of its own. This super-division has only happened in the last two or three years. All the investigations of the Bureau of Dairying are strictly agricultural activities and there is no need of a separate laboratory in which to conduct these investigations other than that of the old Bureau of Chemistry.

These independent investigations of truly common subjects are typical of the duplications which are continually manifesting themselves in various departments of the Government, and particularly in the Agricultural Department itself. As an illustration, in the Bureau of Dairying investigations are made of the nutrition of dairy cows and the secretion of milk, metabolism of bacteria, chemico-physical properties of milk, utilization of dairy products, all investigations, as like as Tweedledum and Tweedledee to the Bureau of Animal Industry's major activities.

The Bureau of Entomology

The Bureau of Entomology contains laboratories for the purpose of investigating arsenical, copper and lead compounds, cyanide, nicotine, petroleum oils and various other substances used as insecticides and fungicides. Arsenites and arsenates in combination with lead or otherwise are used in laboratory and field experiments for the control of the coddling, gypsy and brown-tail moths, grasshoppers, Japanese beetle, alfalfa weevil, cotton-boll weevil, mosquito larvae, plum curculio, Mexican bean beetle and other insects. Nicotine and pyrethrum, as well as the less known paradichloro-benzene are not forgotten. Aeroplanes have been used for distributing arsenicals over wide areas. An extensive investigation of the fluosilicates, especially of sodium and calcium has been instituted to determine their value as poisons for certain classes of insects. The cyanides are under investigation for similar purposes. Studies are also making of carbon disulphide in soils infested with the larvae of the Japanese beetle.

A very interesting statement is made in respect to these investigations to the following effect:

> *"Studies have been made in co-operation with the Bureau of Chemistry and Soils on the effect of the size of the oil drops in the emulsion on the toxicity to insects."*

> *"Without the assistance of chemistry it is quite possible that modern agriculture would be little ahead of the crop and animal growing practices of three hundred years ago. Reason enough therefore, for the Department of Agriculture to engage in chemical research; but let us see how these activities have been multiplied beyond all reason till a bare survey of the number of laboratories will appall even the cubby-hole scientist."*

This is a most deliciously suggestive statement. It points the way to the solution of all these unnecessary duplications of endless chemical laboratories in the Department of Agriculture.

Food, Drug and Insecticide Administration

It is pleasing to know that although this unit has been entirely separated from the Bureau of Chemistry, it still recognizes the dominant factor of chemistry for the purpose of conducting its operations. In fact, were it not for chemistry it would be impossible to have a Food, Drug and Insecticide Administration. Hear what is said in regard to this matter:

> *The science of chemistry is essential for the development of facts and principles to guide administrative action in the enforcement of the Federal food and drug act, the insecticide act, the tea inspection act, the naval stores act, the milk import act, and the caustic poison act.*
>
> *In the enforcement of the Federal food and drug act, it is essential not only that the existing knowledge of chemistry, bacteriology, pharmacology, toxicology, and medicine be brought to bear on numerous questions involving adulteration of foods and drugs with various ingredients, but also that new facts be ascertained by scientific investigation and experiment regarding the composition of a particular food product shipped within the jurisdiction of the act and the effect upon health of the specific adulterants found in that product, in order that appropriate action may be taken to protect the public from fraud and from harmful adulterants.*

The chemists in this unit are supposed to give their whole time to the examination of foods and drugs to determine whether they are adulterated or misbranded. It is a curious situation that while they do all the testing nevertheless all research work is expected to be performed in the Bureau of Chemistry and Soils. In other words, those who make original researches are not the chemists who are working for control of interstate traffic in foods and drugs. I do not know of any other investigations of this kind that are carried on in public or educational or industrial work anywhere in the United States in which the actual workers are not allowed to conduct research.

In the establishment of the Bureau of Chemistry and Soils following the abolition of the old Bureau of Chemistry great stress was laid upon this point by the Secretary of Agriculture and others who spoke before the Committee in favor of divorcing police work from research work.

All the laws relating to insecticides, fungicides, caustic poison control and naval stores investigation, are listed under the Food, Drugs and Insecticide Administration. When it comes to the work done for the Post Office Department and the Federal Trade Commission, Dr. Lyman F. Kebler, who is in charge of the greater part of this work, collaborates in the efforts to deny the use of the mails to fraudulent schemes and to assist the Federal Trade Commission in their efforts to compel those who practice unfair competition to cease and desist their dishonorable activities. Such activities are proper and legitimate but one wonders how long it will be before the Post Office and the Trade Commission will be adding testing laboratories to their budgets.

> *"The chief reason for duplicating all this work is the ambition of the Directors of the Bureaus. I blame no good man for being ambitious. When, however, that vaulting ambition o'erleaps itself and seeks to disintegrate a great science; to have a multiplicity of directors, chiefs, chemists, analysts, investigators, inspectors, assistants, and bottle-washers, it then becomes a threat to efficiency and economy."*

Bureau of Biological Survey

The Bureau of Biological Survey collaborates with the Bureau of Plant Industry and with the Bureau of Chemistry and Soils. Nevertheless, a separate laboratory is maintained by the biological survey for the purpose of devising methods for eradicating wild animal pests, particularly on western stock ranges where wolves, coyotes, and other predatory animals and such rodents, as prairie dogs, pocket gophers and ground squirrels destroy live stock and forage. The chief chemicals employed by the biological survey and its co-operators in organized campaigns for past control are strychnine and barium carbonate. There really does not seem to be any dire necessity for equipping an extra laboratory and manning it with a separate staff for these purposes.

Bureau of Plant Industry

Chemical laboratories are springing up like a crop of mushrooms in the Bureau of Plant Industry, both in its Washington and field localities. In addition to these laboratories of their own, a very proper activity is carried on in co-operation with the Bureau of Chemistry and Soils. On account of the importance of color in determining the marketability of fruits and vegetables and preserved products derived therefrom, a general study of various kinds of pigments is being conducted in many localities. Certain new processes

are being tested in which green fruits are subjected to treatment which develops a color similar to that accompanying ripeness. These are dangerously near being refined methods of adulteration and misbranding. To the laboratories of Plant Industry are confided also the studies of washing apples for the removal of excessive quantities of lead and arsenic. Extensive investigations of cereals are also conducted by this Bureau. They have taken up also the studies which I inaugurated in the old Bureau of Chemistry of developing so far as possible the more valuable constituents of plants. For instance, regional experiments in developing additional sugar in sweet corn, increasing the content in sugar 4% in sorghum, and additional protein in wheat.

These investigations were taken bodily over from the old Bureau of Chemistry and thus set an example of duplicating similar work in the same department to the great disadvantage of efficiency and economy. Many of the studies of sugar plants for example have been duplicated in the Bureau of Plant Industry. In fact, the whole investigation of the sugar beet industry was taken over by the Bureau of Plant Industry, being transferred *in toto* almost from the Bureau of Chemistry. Absolutely similar investigations were repeated.

In fact, if I should give a list of all the chemical studies conducted by the Bureau of Plant Industry it might be taken, word for word, as a description of the activities of the Bureau of Chemistry and Soils or the old Bureau of Chemistry. Here is a striking illustration of duplication which is unnecessary and very costly. It is doubtless due to the rivalry between the different bureaus as to which shall get the most work of the most varied kinds, for the importance—and the salary—of the Bureau Chief is judged too much by the number of workers under him and far too little by the value of the work done.

Bureau of Home Economics

Among the plain and fancy studies of the Bureau of Home Economics are the calcifying properties of commercial alcohol-soluble extract of cod liver oil, looking to a method of measuring the activity of vitamin D in foods. This and other experiments with other vitamins parallel the activities of the Public Health Service and essentially repeat the experiments made therein. The Bureau of Home Economics also studies chemically and physically the properties of textiles and the changes made therein by home laundering and cleaning. The Bureau of Standards please note! Extensive experiments are also made in cooking and in studying the effects of cooked food on digestion and absorption.

The experience that I have had in dendro-chemistry is co-extensive with my active chemical life. Early in the history of Purdue University I organized an extensive investigation of the chemistry of trees. I studied especially the difference between maple trees in measuring the pressure of the sap and the content of the sugar therein. I early organized a dendro-chemical laboratory in the Bureau of Chemistry. The first investigations made were on the distribution of tannin in the various parts of those trees that bear it in sufficient quantity to be commercially valuable. The roots, the various parts of the trunk, the limbs, and the leaves were carefully analysed. I collaborated with the Forest Service, as that was my only way of getting whole tree samples. Valuable work went on for several years when one day I awoke to the fact that the Forest Service had concluded to abandon my co-operation and establish its laboratories in the University of Wisconsin to repeat this investigation of forest products. They are there to-day. I can not discover, however, that they are doing any more valuable work than we were doing in the old Bureau of Chemistry, or as well as we could do it, or as patiently and as thoroughly.

Forest Service

In the pamphlet to which I have alluded you will find these statements made:

> *"The work is carried on at the Forest Products laboratory of the Forest Service at Madison, Wisconsin."*

There we find all those researches that we carried on still continued, and in exactly the same manner in which it was done here in Washington. I can not see what particular benefit can come to the Forest Service in placing its laboratories so far from the home office. I suppose that the chemists working in this laboratory are members of the Forest Service, but there is nothing said about this in the publications to which I so frequently refer. All I know is that apparently the very kind of work that we were doing is still duplicated at Madison. It is obviously more extensive to conduct a laboratory there than it would have been to continue it under the auspices of the old Bureau of Chemistry.

It is evident that chemical science in the Department of Agriculture is all of such a character that it could all be done in one grand laboratory with a distinct saving in personnel, in expense, in efficiency and in collaboration. The chief reason, as I have already intimated, for duplicating all this work, is the ambition of the Director's of the Bureaus. I blame no good men for being ambitious. When, however, that vaulting ambition o'erleaps itself and seeks to disintegrate a great science, to have a multiplicity of directors, chiefs of laboratories, chemists, analists, investigators, and assistants, it becomes a threat to efficiency, and economy.

British Board of Trade announces that synthetic acetone, fermentation acetone, reagent acetone, and radium compounds will continue to be exempt from Key Industries Duty of 33⅓ per cent. ad valorem until June 30. This amends a previous announcement regarding exemptions, published in the January issue of CHEMICAL MARKETS.

Revising Chemical Tariff Schedules By Debate

An impressionistic report of the Hearings before the Ways and Means Committee of the House of Representatives by Williams Haynes

Farm relief has replaced national defense as the compelling motive of tariff making. Eight years ago, any witness before the Ways and Means Committee, of which Mr. Joseph Fordney was the Chairman, who could prove any contribution which his industry or its goods made to munitions, was sure of the gentlest treatment. In the present hearings the lucky industry is that one which is able to show that better protection for it will—however indirectly—prove in some measure an aid to the American farmer.

In both instances the American chemical industry finds itself placed in a stragetically fortunate position.

Commercial Solvents and Corn Products took fullest advantage of their enormous consumption of corn, and the Manufacturing Chemists' Association submitted a brief printed on corn-stalk paper. Dr. Killheffer threatened to read the statement of the Synthetic Organic Chemical Manufacturers dressed in overalls, and if Mr. Pardee had not filed his brief for Dow on magnesium sulfate, he would doubtless have claimed in introducing himself to the Committee to represent the biggest orchardist in Michigan. Even sodium phosfate was presented as a by-product of the fertilizer industry, which in verity it is fast becoming. So it went, and whoever could scare up a country cousin in the family claimed the relationship with gusto.

The chemical industry has had tariff-pleading experience aplenty; but we might learn a lesson or two from the farm interests who have evidently turned their long legislative training to the tariff. In presenting their arguments for a flat *ad valorem* rate of 45 per cent. on all fatty oils they introduced the subject by a representative of "a million farm families", members of the Farm Bureau Federation. They followed through with a representative of the National Grange, and the Commissioner of Agriculture of Louisiana, who make a neat political plea to his fellow Democrats on the Committee. In between they brought out the competition of foreign oils with (*a*) butter, (*b*) cotton seed, (*c*) flaxseed, (*d*) American fish oils; and they offered to demonstrate Congressional and legal precedent for making this flat rate of duty apply against coconut oil and copra from the Philippines. It was a very neat job, and so convincing that one may well be surprised if the soap, paint, and varnish industries do not find this proposed duty on their raw materials in the new tariff bill.

Chemical arguments were in the main splendidly presented. There was no planned, massed attack of this kind; no effort to tie up the whole of industry's interests, or to bring forward the support of other industries involved. Each witness pleaded a specific case. No commanding General Staff of tariff operations had planned the assault. This was a good chance lost.

The pity of it is that among the chemical industry's representatives were half a score of capital witnesses. Cressy Morrison gave a polished performance. His easy, almost confidential way with the Committee had a soothing effect, and even when Representative Rainey, as of old, tried to connect the Union Carbide interests with the wicked Power Trusts, Mr. Morrison was skillfully able to turn this line of questioning to his own benefit.

L. V. Redman made a splendid impression and was quite unperturbed by Judge Hull's shrewd comment on "preventive competition". Modestly crediting all the technical development to Dr. Baekeland, Dr. Redmond explained the intricacies of the raw materials and costs of plastics, and asked for an advance of duty, not on the plastics in crude form, but on articles manufactured from them. How difficult a task it is to make the inter-relationship of commercial chemistry plain was testified by the way the entire Committee preceptibly brightened up when a witness for the Eagle Pencil Co. displayed samples of fountain pens, showing that Germany was offering them at from $6 to $9 a gross and that they are selling in competition with American pens which can not be made cheaper than $18 a gross. Here was something to be handled and compared with some degree of confidence. Everyone knows what a fountain pen is. Everyone has cussed over a faulty, baulky one that fountains ink in the vest pocket or over the fingers, instead of functioning properly.

Dr. Killheffer showed a nice appreciation of how helpful something tangible of this sort is in explaining a technical problem, when he presented a big chart showing quantitively the materials used in

producing Indanthrene Blue, G. C. D. For a pound of the finished dye, 84 pounds of chemicals and intermediates, so he told the Committee, and his competitors in the audience had to take his word for it, for one of the most skillful bits of work at the hearings was the way the Newport minions whisked that revealing chart away under cover from prying eyes.

But the Committee saw it. They leaned forward and studied it. They learned no technical secrets; but they were plainly impressed with the importance of dyemaking to other branches of the chemical industry. Such displays are of the greatest help, for such inter-relationships of industrial chemistry cannot be made too plain and understandable. The disposition of the present tariff makers is co-operative, and they are earnestly trying to draft equitable rates with the view always of doing their bit for farm relief.

INTEREST in farm relief was not, however, the sole distinction between the hearings presided over by Mr. Fordney of Michigan and Mr. Hawley of Oregon.

There are differences which arise out of the different temperament of the Chairmen. Mr. Fordney was a vigorous leader, a protectionist reformer bent upon righting the wrongs of the Democratic schedules of the Underwood Tariff. No such obligation urges Mr. Hawley to action. He is calmer and more judicial; and while he is in control of the situation always, he obviously conceives his position as that of an umpire, rather than as a team captain. His chiefest concern is to strike an even balance between giving every witness a fair opportunity to be heard and conserving the time and energies of his colleagues.

As a result the whole atmosphere of the committee room is fairly saturated with good will, toleration—and tobacco smoke.

Most credit for this changed spirit must, of course, be given to the Democratic members. They could easily ruffle the calm of that big, gray fatherly Westerner who sits on the Chairman's dais. They might badger witnesses with tricky questions. They might rub raw the nerves of their Republican colleagues by drawing invidious comparisons between the vaunted Republican prosperity and the woe-begone testimony of industries threatened with bankruptcy —unless given more adequate protection. They do none of these unpleasant things. They are endeavoring to arrive at the facts in a spirit of fairness. This restraint and very distinguished toleration is to their great credit.

For you must not for a moment deceive yourself that they have been beaten in dumb submission by the results of the election. Nor have they followed their defeated leader in his attempted revision of Democratic tariff convictions. Only a very dumb observer would think for a moment that the quiet courtesy of Rainey of Illinois or the sharp pleasantries of Garner of Texas, however different from their former methods of questioning a witness, are signs of conversion to the principles of protectionism.

The razor-keen intellect of Cordell Hull of Tennessee illustrates at its best the working of the Democratic mind of the Committee. He is keenly interested in securing any possible data on foreign costs of production and repeatedly asked chemical witnesses to submit such figures in supplementary briefs. He displays a sort of righteous curiosity in the profits of American industries enjoying or asking for protection, a curiosity that caught more than one witness embarrassingly unprepared for such questions. He wants to know quite definitely what *ad valorem* rates mean in dollars and cents and what relation specific rates bear to costs or selling prices. He bores into the very core of questions leading up to the net effect of tariff levies upon costs of living at the American standard. In a word, he accepts tariff protection as a necessary evil, an economic expediency required by the conditions of today; but he bends his exceptional analytical powers to the purpose of assuring that, so far as he is able to prevent it, there shall be no selfish exploitation of these benefits.

REPUBLICAN members too, have undergone some healthful reformations. While they are frankly protectionist in their attitude towards any dubious question and do not hesitate to lend aid and comfort to a witness by asking friendly questions which will enable him to emphasize the best points of his argument, nevertheless they are not often willing to come to the rescue of what appears to them to be lost causes. It was Watson of Pennsylvania, one most apt to ask helpful questions, who devastatingly suggested to the unfortunate coated paper manufacturer that a reduction in duty on casein could hardly be more helpful in meeting foreign competition in export markets than a drawback which enabled him to recover the present duties paid on materials shipped out of the country.

Bacharach of New Jersey stops pacing up and down behind his fellow-members long enough to display a lively interest in chemicals and plastics. He it was who asked the burly Mr. Moscrip of Lake Elmo, Wisconsin, "What research work is the National Co-operative Milk Producers' Federation doing on casein?" A most significant query that—for while we should naturally expect a representative from so chemically-minded a state as New Jersey to be interested in such matters, even such logical expectations have not always in the past been fulfilled. It bespeaks an intelligent comprehension of industrial conditions today that is very helpful to the chemical industry. Hadley of Washington, Chindblom of Illinois, and Estep of Pennsylvania all revealed to a rather exceptional degree a similar understanding of industrial problems, and young Aldrich of Rhode Island, while his questions were usually designed to bring forth additional facts, rather than to help the witness, showed also a nice appreciation of present day conditions.

The WAXES of INDUSTRY

By James R. Sanderson

Most waxes on the market are "mixtures"---often a polite name for adulteration --- although in pure form every wax has certain definite chemical and physical properties which make it most economical and efficient for a given industrial use. Sometimes these requirements are extremely exact: always there is a best wax for a certain purpose. This article might well be entitled: "What a wax user should know about wax."

VERY few people have any idea what wax actually is; how many waxes are commercially available; what vast quantities of wax are used in industry.

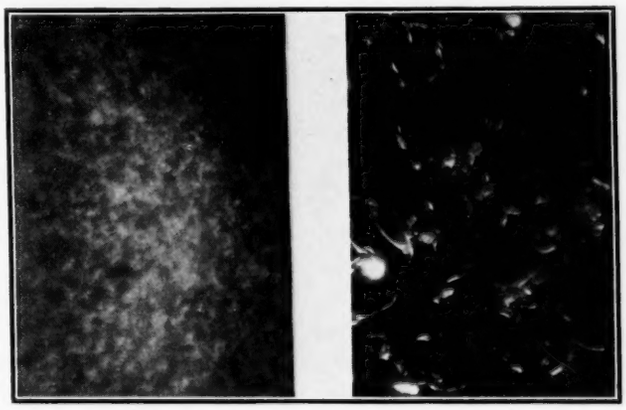
If those who buy and use waxes would inform themselves as to the properties and characteristics of each kind of wax, and test shipments received, they would profit greatly. By rejecting inferior or adulterated material they would soon bring about a condition where their own manufactured products would improve in quality and possibly the range of quotations for a given kind of wax would be narrowed down. Adulteration would become far less common—and everyone who has any interest in obtaining uniform raw materials for purposes of manufacture will grant that that would constitute progress.

Many samples of waxes, whose actual melting point was ten to twelve degrees Centigrade lower than they were marked, are on the market and many more are grossly adulterated. The fact that a wax can be sold as having a melting point of 68/70°C., when its melting point *is* 56/58°C., does not speak well for the alertness of the buyer.

What is wax? Most dictionaries say something like this: "The substance secreted and employed by bees in the construction of their cells." A few dictionaries, and one or two encyclopedias do better; but that is quite typical of the average person's idea of wax.

Chemistry furnishes a definition which reveals the fact that there may be more than one kind of wax. It defines wax as an ester. In organic chemistry an ester is the product of a reaction between an alcohol and an organic acid. Wax is defined as an ester of an organic acid and a monohydroxy alcohol of high molecular weight. This includes all waxes of plant and animal origin. It does not, however, furnish a complete description, and it omits the hydrocarbons among which is the most widely used wax of all,—paraffin,—and it fails to cover synthetic waxes. There is therefore, some confusion as to the meaning of wax, due to the fact that no single chemical characteristic applies to all "waxy" substances.

The generally accepted conception of wax is of a solid substance with a more or less soft, satin-like surface. It might be possible to arrive at a more comprehensive definition which, though longer, would be more satisfactory. Waxes might be defined as substances, either esters of higher monatomic alcohols, certain hydrocarbons, or various synthetic products, which, when near their melting points, are plastic solids, and have a characteristic unctuous feeling. Note, however, that there is a distinct differenee between a plastic solid and a viscous liquid. Examples of the latter, which may seem to be solids are asphalts, tars, molasses, and varnish, which, however far below their melting points, never become solids; but will always flow under the pressure of their own weight. Waxes of animal and vegetable origin are not entirely esters, but nearly always contain some uncombined natural fats such as stearin, palmitin, myristin, olein, etc., as well as some unsaponifiable matters, and frequently free fatty acids.



Photomicrographs showing difference in physical structure between ceresin (left) and paraffin (right). Taken under identical conditions. Magnification, 400 diameters.

Waxes play a large, important part in many sorts of industries. Often a product, in which wax is a minor ingredient from the standpoint of quantity, calls for the most exacting requirements in respect to the properties of the wax employed. Square miles of wood floors are waxed, not once but continually. All fine linoleum is waxed at least once, and most of it at regular intervals. Consider the millions of

candles used, the shoes polished, the thousands of miles of waxed electrical insulation, waterproofed fabrics, and waxed paper. Wax figures stand in show windows everywhere. In soft rubber goods wax is used as an extender. Literally there are the hundreds of other places where wax goes.

Not all these uses are forced to keep to a particular wax. Floor polishes are made by different formulas as far apart as beeswax, turpentine, and linseed oil for one, and Carnauba wax, paraffin, and a petroleum solvent for another. Requirements or specifications vary throughout a wide range. Where they must be very exact, adulteration renders the material wholly unfit. In some kinds of work one property of wax may do while another may furnish a distinct advantage. In impregnating wood, for example, a wax with a high temperature of ignition is greatly preferable as it decreases the fire risk.

Illustrating the important part played by the properties of the wax, how necessary it is for users to know what is to be expected for each kind—let us take one or two cases which, while comparatively unimportant as far as quantities involved are concerned, nevertheless serve to make the point clear.

In biological laboratories, wax is used as an embedding agent for the preparation of specimens for examination under the microscope. Tissue is embedded in wax, and a shaving not over a thousandth of an inch in thickness is made with a microtome. The wax is dissolved in xylol or some other solvent, and the sample of tissue is then ready for examination. The wax used should be chemically neutral, it must be capable of shaving without crumbling, and it must melt at low temperature so that heat great enough to damage the tissue need not be used in the work. One wax — low melting paraffin — fulfills these requirements well,—practically no other will.

Dentists use wax for taking impressions of cavities to make plaster moulds in which metal fillings are cast. The wax is burned out of the mould in a small furnace. It is required that the wax be not sticky, that it be plastic at moderate temperature for use in the mouth, and that it burn out of the mould without leaving any residue. Few waxes and few compounds satisfactorily meet these exacting needs. If the makers of such compounds cannot find uniform raw materials their difficulties are increased many times.

View taken in an ozokerite mine, showing a good-sized fissure of ozokerite at the miner's right shoulder. It is interesting to note how loose rock, fossils, etc. are imbedded in the solid wax. The black-looking liquid in which the man stands is water, and not oil.

In electrical power condensers, where extremely high insulation is imperative, paper impregnated with an amorphous wax is used. The hydrocarbon waxes take precedence here over animal or vegetable waxes because of their freedom from acidity. Other properties must be considered such as power factor, and obviously, melting point.

All users of wax should understand the common characteristics of the various kinds, not only such things as melting point, iodine value, saponification number, coefficient of expansion, and penetration, but also such physical properties as toughness and hardness. For instance, melting point and hardness are not correlated. Carnauba wax will melt at about 176/178°F., but has a harder surface than lead, which melts at 621°F. Another wax melts at a temperature considerably higher than the boiling point of water at sea level, a cake of which twelve inches square by two inches thick will bend of its own weight at room temperature, while other waxes of far lower melting point will not do so under identical conditions.

Moreover, a study of waxes will show how they can be treated so as to fulfill certain conditions, but if users permit adulterations to be practised, what treatment can be specified when each shipment differs from its predecessor ? In spite of the fact that in nearly every use for wax the requirements are specific in one way or another, many concerns appear to purchase these products as housewives buy melons. They feel and make a choice, with perhaps a little advice from the vendor. Sometimes price is permitted to be the controlling factor when it should not be, since there is no reason for it to be. And yet, too often, purchases are made to specifications received from the research department, or the laboratory, or the chemist, or someone who is employed to develop correct information for the purposes of the business, but whose knowledge is incomplete.

Waxes are the products of animals, plants, and the earth; in fact, it is said that every plant and animal exudes a wax. Not only are these natural sources exploited, but there are also several synthetic waxes which are on the market. The word "synthetic" is in several instances used inexactly, with the result that it is misleading and unfair to manufacturers of real synthetic products. Synthesis is the combining of two or more

things with a resultant product different from any of them. A chemical reaction takes place. To melt and mix two waxes together is to make a mixture or compound, but it is not synthesis, even though the compound may have a melting point below that of one ingredient and above that of the other. To call a wax of petroleum origin which resembles beeswax in appearance a synthetic beeswax, or even a synthetic wax, is incorrect, for it is not synthetic. But to treat napthalene with chlorine and obtain a wax-like substance differing chemically and physically from both constituents is synthesis. Beware of mixtures or compounds sold under the same name by more than one maker, if you desire uniformity. Such compounds can be made at lower cost of known quantities of definite raw materials. Petroleum products which are unadulterated are usually good even though they may not be synthetic.

It may be of interest to consider a few waxes of the various types. Somewhere around three to four million pounds of Carnauba wax are imported into the United States annually from Brazil, which exports almost twice as much more to other parts of the world and uses a good deal herself. This wax is obtained from the leaves of a palm, the coripha, *copernica cerifera*, which, it seems, will not grow successfully anywhere else. Carnauba is very dry, not greasy, is easily powdered, has a crystalline formation, is very hard when cold, and melts at 174 to 178 degrees Fahrenheit. It is used chiefly in mixtures to harden or stiffen various products, such as candles, polishes, and other things. It comes in several grades, not as clearly defined as could be wished, the better of which have a rather fine light yellow color and sell from 50-75c a pound, and in a medium dark chalky green color which sells at around 27c a pound. This last

Carnauba wax is melted in clay vessels over fire and then strained through cotton cloth, after which it is ready for market.

grade contains considerable palm fiber which must be strained or filtered out.

Probably the best known wax is beeswax. Unbleached it is generally brown and often somewhat sticky. There is a yellow grade, and it is also bleached to white, usually by exposure to the sun. It has fairly fine texture and pronounced plasticity when unbleached. On purification and bleaching it becomes white, odorless, tasteless, and comparatively brittle. It sells at from around 35-60c a pound, according to the grade. It is secreted by bees by special glands on the under side of the abdomen and is used by them, after mastication and mixture with the secretion of the salivary glands, for building the honeycomb. It is

The Carnauba palm grows best in valleys, on river banks and lagoons subject to periodic floods by inundation. It is never found on high ground. The yield of wax is greatest in dry years when the floods have been short.

excellent for high-grade candles, among its many uses, and in this connection it is interesting to note that the Roman Catholic church requires that its candles contain over fifty per cent. beeswax.

Great quantities of paraffin are produced by the oil refineries. Everyone is familiar with paraffin which, as stated above, is a hydrocarbon. Waxed paper, waterproofed fabrics, candles, polishes, all use it; preserves are sealed with it. It has a thousand applications, one important one being the adulteration of other waxes, for paraffin sells at from 5-10c a pound (depending on its melting point) and nearly all other waxes bring considerably more. Since it is a hydrocarbon and therefore unsaponifiable its presence in combination with wax of the ester variety is readily determined by a saponification test. It can also be identified by examination under the microscope, and by the fact that its solubility at a given temperature in certain solvents differs from that of whatever other wax it may be mixed with. When mixed with non-crystalline materials there are means of detecting it by its crystallinity.

An interesting wax of animal origin is known as Chinese wax, or Chinese insect wax. It is produced from an insect, *coccus ceriferus*, which is a parasite on the ash tree indigenous to parts of China. This insect belongs to the same genus as that which produces lac, best known in the form of shellac. Chinese wax is very hard and highly crystalline, long crystals forming perpendicular to the cooled surfaces. In appearance it resembles spermaceti (as it does also in odor) it has a much higher melting point (about 176 to 180°F.) and is one of the three or four highest melting waxes known. It is used in China and Japan for candles, for coating candles made of inferior material, and also

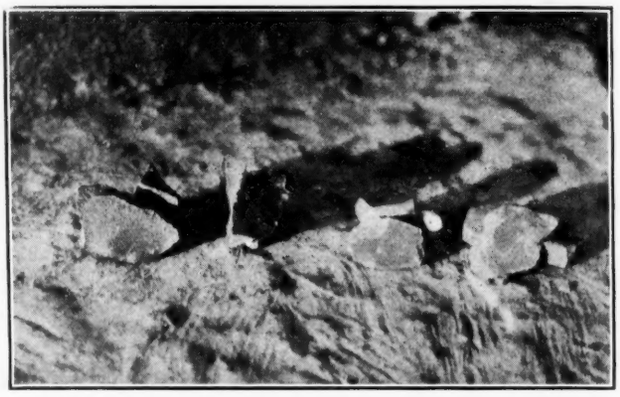
for sizing paper and textiles. Not much of it is used in the United States, most of the export going to Europe.

Japan wax, from the berries of a certain Japanese variety of sumac, is a useful compounding ingredient, being fairly soft and having a moderate melting point. It is rather a fat than a true wax, and is easily softened and adulterated. Some success has been attained in California in growing the tree which yields it. Myrtle and bayberry wax come from the berries of several species of *Myrica*, small trees or low spreading shrubs native to the southeastern United States. They have been much used in candle making, usually with the addition of beeswax, and as there is a large percentage of fat in them and they have a pleasant odor, excellent soaps can be made from them.

Ozokerite—A Mineral Wax

An important mineral wax, a hydrocarbon, concerning which there is a good deal of misinformation, is ozokerite. Sometimes it is spelled *ozocerite*, the difference being in whether the Greek or Latin root is taken. The spelling *ozokerite* would seem more consistent, since the name is derived from two Greek words, *ozo*, I smell, and *keros*, wax, and not from the Greek *ozo* and the Latin *cera*. This origin of the name is odd, for ozokerite has no odor except when well above it smelting point. Ozokerite occurs in solid form in fissures or beds, and while it has been found in several parts of the world, for a considerable time its only source has been Galicia in Europe. A large deposit has, however, recently been opened up on a commercial scale in Utah. This mineral is chiefly an amorphous hydrocarbon in combination with some oxidized matter resembling hard, high-boiling pitch, which when separated out has been known as ozokerite pitch. The quantity of this pitch present tends to be less at greater depths than at the surface. Ozokerite is generally black, but occasionally brown.

There is also present in it an oil, which, thanks to recent discoveries, can be removed, rendering possible the production of material of a high grade of uniformity in respect to hardness and melting point. When freed of pitch and oil, the hydrocarbon, or wax, is usually dark, showing green to reflected light and brown to transmitted light. It is decolorized to light brown, yellow, and white. The hydrocarbon freed of pitch is technically known as *ceresin*, and when pure and free from oil is a very fine wax, valuable for many purposes. While containing no fat it can nevertheless be emulsified, if properly treated, and so yields emulsions in which the disadvantage due to liberation of alcohols in saponification are avoided. Good ceresin should have a melting point of about 160°F. or over, a higher melting point often being obtainable. In Galicia, in rare instances, ceresin has been found having a melting point of slightly over 212°F., and has been given the name "Marble wax." In connection with melting point it is interesting to note that in an article recently written on electrotyping, (electrotypers all use ozokerite as the chief ingredient of their wax moulding compound) the statement was made that ozokerite melts at 120°F., while in the International Critical Tables of Numerical Data, Physics, Chemistry, and Technology, four volumes of which have appeared at this writing, the melting point of ozokerite is given as 110°C., which is 240°F.! The writer feels safe in saying quite positively that neither



Pieces of Carnauba Wax showing crystalline formation. About three to four million pounds are imported annually by the United States from Brazil.

of the figures is correct. Perhaps it would be possible to obtain fractions melting at these points in the laboratory, but not as a commercial proposition. Ozokerite and ceresin are distinguished by their fine texture, lack of crystalline formation, and by their melting point. They are most often adulterated with paraffin, whose presence can be ascertained by test. Stearin is also used, and to some extent, oil. There is a regular market for a compound masquerading under the name ceresin, which actually is a mixture of paraffin hardened with Carnauba wax.

Mention has been made of most of the principal waxes of commerce. A few others are used considerably, notably candelilla, a vegetable product from Mexico, similar to Carnauba, and much employed as a substitute for it, and Montan wax, a product of the distillation of lignite. This wax has been developed in Germany, where it is made in large quantities. Wool wax is excellent for leather dressings, etc.

Many waxes are obtained as by-products, and have no commercial application, either because their quantity is insufficient or because no use for them has been found. Some sugar refineries produce sugar cane wax, not so much in this country as in South Africa. Coffee wax occurs in removing caffeine from coffee. Wax is produced from cotton, and there are waxes obtained by perfumers from various flowers. Finally, passing mention must be made of adipocere, or cadaver wax. Burial in a damp spot, with little or no ventilation will, in the course of a number of years, reduce a corpse to a little wax and some bones. Needless to say, adipocere is scarce and its value unknown, but we are thankful that the only specimen we have ever seen was pure white.

CHLORINE

in the Fields of Sanitation*

By L. H. Enslow
Research Engineer, Chlorine Institute, Inc.

IF Nature had not provided chlorine, man would have had to invent it for sanitary purposes at least. It is cheap; its application is controllable; it moves with the speed of lightning to kill harmful bacteria and to rearrange or destroy other organic matter in potable water supplies and in sewage.

The application of chlorine in sanitation is highly developed in North America, but improvements and new ideas come along steadily. That chlorine is not used so much abroad in sanitation is no challenge to our practices. European conditions are different. European per capita water consumption is low and ours is very high for familiar reasons. South America is copying our practices, and in a growing number of communities you can safely drink the water supply.

The technique of water chlorination at times requires two other gases, sulfur dioxide and ammonia. We cannot at this time foresee the use of oxygen, hydrogen, and acetylene, but as water and sewage problems become more complicated, as they do, anything is possible.

A stream or a well exhibit the life cycle, and if the demands are not too heavy on them, require no sanitation except that of their own making. However, our streams are required to furnish water supplies, sewage facilities, transportation, scenery, industrial needs, and political boundaries. This is a big order and chlorine makes possible its filling. Comparatively few American water supplies are obtained from wells; but they, too, are often polluted through geological faults or by freshets, and it is increasingly the practice to chlorinate well supplies. The growth of water chlorination, since its beginning less than 20 years ago, has been phenomenal. Not less than 90,000,000 people in over 6,000 communities are supplied with water rendered safe by chlorine.

Progress in Water Chlorination

The advances made within recent years in the art of water chlorination can only be given in summary. During the first ten years the chlorination process was not well understood and therefore was lacking in efficiency, except at the larger cities where competent laboratory control was available, and daily, if not more frequent, bacteriological examinations were made. Even then unaccountable results were apparent from time to time. Now such occurrences are exceedingly rare because of efficient control. Perfected methods for so-called "free chlorine" determinations by Ellms and Hauser[2] and the subsequent adaptation of the "free chlorine" test in 1918 by Wolman and Enslow[3] provided means of scientific regulation of chlorine dosage. The newer method of control was based on the addition of sufficient chlorine to satisfy the "chlorine demand" and leave some "residual chlorine" in the treated water after a short period of reaction. This proved to be of paramount importance in making chlorination dependable under a great variety of circumstances. Without proper control, chlorination is either over done or affords only false security. Within the year (1928) failure to regulate the chlorine dosage by making daily tests for residual chlorine resulted in a typhoid epidemic at a small city in New York State. Use of the test would have disclosed the sudden increase of chlorine demand due to the accidental gross pollution of the water supply.

Prechlorination

One, if not the earliest, to advocate raw water chlorination to reduce the bacterial load on sand filters and the expenditure for coagulant was N. J. Howard of Toronto[4,5] where prechlorination has been effectively practiced with a material saving in coagulant for a number of years. It is only within the past two years that prechlorination has received any marked impetus in the United States. This progress is recounted in recent papers by the writer[1,7].

Aside from the value in reducing the bacteria and rendering additional safety, prechlorination possesses, among others, the following merits:

(a) Allows reduction of residual chlorine carried in finished waters.

*Presented at the Annual Meeting of the Compressed Gas Mfrs. Assn., New York City, Jan. 21, 1929.

1. L. H. Enslow. Recent Developments in Application of Chlorine in Water Purification, Municipal News and Water Works, Aug. 1928; Canadian Engr., Aug. 7 and 14, 1928; Western Water Works (Construction News), Aug. 1928; Jour. A.W.W.A, Nov. 1928.
2. J. W. Ellms and S. J. Hauser, Jour. Ind. and Eng. Chem., 5, 11, 915 (Nov. 1913).
3. A. Wolman and L. H. Enslow, ibid. 11, 3,209 (Mar. 1919).
4. N. J. Howard. Journal A. W. W. A., 9, 4 (1922).
5. N. J. Howard. Modified Prechlorination. Canadian Engr., Feb. 26, 1924.
7. L. H. Enslow. Jour. A. W. W. A., 18, 5 (Nov. 1927); Can. Engr., June 14, 1927; Water Works, July 1927.

(b) Algae growths controlled in basins and filter beds.

(c) Longer filter runs between washings and less wash water required.

(d) Reduction of coagulant dosage in certain instances.

(e) Reduction of "slime" on sand grains and consequent less trouble with mud balls and cracked filter beds. More sparkling effluent results.[12]

(f) Reduced tendency for sludge in coagulation basins to putrefy or lift to the surface as a result of gasification. More palatable water results.

Super- and Dechlorination

Again the United States is indebted to Canada for the first practical large scale application of superchlorination for destruction of chlor-phenolic taste producing products attended also by superdisinfection followed by dechlorination which was developed at the Toronto filtration plant by N. J. Howard, assisted by R. E. Thompson[6]. To A. U. Sanderson, Superintendent of Filtration Plants, is also due a large measure of credit in forwarding the progress of this development. Superchlorination followed by dechlorination was inaugurated at Toronto in the Fall of 1926. It was later discontinued, but recurrence of tastes justified resumption of the process in June, 1927, since which time it has continued with success.

The procedure consists of dosing the *filtered* water with 0.8 to 2.5 parts per million chlorine, the maximum being required in coldest weather. A contact period of approximately one hour is thereafter available in the filtered water collection basin and tunnel delivering to the high pressure pumping station. At this station all excess "residual" chlorine is destroyed by application of sulfur dioxide fed through Wallace and Tiernan "sulfonators" connected to cylinders containing liquefied sulfur dioxide. Excess sulfur dioxide has no deleterious effects, but to insure greatest economy, the plant is operated by simple control tests which indicate that the excess chlorine has been completely destroyed without waste of sulfur dioxide. The superchlorination process is not continuously operated. Laboratory tests on the lake water indicate ahead what to expect in the matter of taste troubles, and only during periods that these tests indicate superchlorination essential is the process used.

The operating cost during use of the process is increased by roughly 78 cents per million (Imperial) gallons. Normally the cost of ordinary chlorination is 96 cents per million gallons. Introduction of chlorine in one-ton containers as planned will reduce the chlorine cost to one-half that on which the above figure is based[1,9].

Other Taste Prevention Measures

In England, Sir Alexander Houston has again led the way in the field of chlorination by developing and successfully applying the preammoniation and permanganate treatments to prevent taste production in chlorinated waters[10].

Pre-Ammoniation—The process consists of application of an ammonia salt or ammonia water sufficient to provide 0.25 p. p. m. available ammonia (NH_3). In America the ammonia water is prepared at the point of application from anhydrous ammonia. *Following* the ammonia application *chlorine* is applied. The supposition is that chloramines are formed which do not subsequently develop taste producing compounds. Regardless of the theories, it seems to be a proven fact that tastes are prevented by preammoniation. In America the process has been employed with success at Greeneville, Tenn., for the past three years[11]. At Springfield, Ill., the process was introduced in February 1928, and continues to render chlorination non-taste producing*. At Bay City, Mich., a combination of preammoniation and permanganate application is so far efficacious in solving a taste production problem supposedly caused by an organic trade waste.*

Permanganization—This process consists of application of potassium permanganate ($KMnO_4$) crystals in conjunction with the chlorination. Sir Alexander Houston points out that permanganate may be applied ahead of, immediately at, or beyond the chlorine application with equal efficiency. To certain waters he applies ammonia prior to chlorination continuously and in addition permanganate is at times also applied at the chlorination stations, if there is any evidence of likelihood of taste production. In America the permanganization process is applied either continuously or intermittently at Rochester, N. Y., and Buffalo, N. Y., with success. The point of application is slightly in advance of chlorination. The dosage at Rochester varies between 0.05 (median) to 0.14 (maximum). At Buffalo the dosage has been varied considerably to meet the demand, but an average of 0.03 p.p.m. is employed for the most part[1].

Chlorine in Algae Control

Much of the water supplied Greater New York is chlorinated three times during its travel from its point of origin to the City. As the water is progressively chlorinated during its passage from one reservoir to another, evidence is available to show the material value of the chlorine in reduction of algae growths in these reservoirs, in which previously an increased growth had been observed. In addition to its value in *controlling* algae growth it has been successfully used to *destroy* synura, asterionella, tabellaria, anabaena, volvox, melosira, ceratium,

6. N. J. Howard and R. E. Thompson, Jour. N. E. W. W. A., No. 3, Sept. 1926; Canadian Engr., Oct. 19, 1926.
9. N. J. Howard. Super-Chlorination of Toronto Water. Can. Engr. June 26, 1928.
10. Sir Alexander Houston, 19th, 20th, and 21st, Annual Report, Metropolitan Water Board (London).
11. J. W. McAmis. Jour. A. W. W. A. 17, 3, 341 (1927).
12. J. S. Whitener. Prechlorination at Raleigh, N. C. Water Works, Dec. 1927 American City, May 1928.

*Through correspondence with Chas. Spaulding, Supt. of Filtration, Springfield, Ill and L. B. Harrison, Supt. at Bay City, Mich.

aphanizomenon and coelosphaerium in the New York water supply. It seems that 0.5 p. p. m. residual chlorine will destroy practically all of the objectionable forms of algae and most of them succumb to 0.2 p. p. m. [1,7,13,14].

Very recently chlorination has been found effective in killing "water fleas" cyclops, daphnia[8] all of which are very undesirable in a water supply.

Chlorine in Fungus and "Slime" Control

Fungi and filamentous slime-like growths such as Leptomitus and Sphaerotitus which occur in sewers and polluted streams are easily killed with chlorine and thereafter slough off and are swept away. In many paper mills biological growths appear in the chests and vats. These growths are known as "slime". Chlorination of the water supply or the "white water" returned to the process is proving very effective in controlling "slime" formation[16]. "Slime" is frequently responsible for an inferior product, or a material loss in production because of temporary shutdown of paper machines, and mill shutdowns for cleanup. Upwards of 40 mills already employ chlorine for "slime" control.

A development along a similar line is the use of chlorine as a preventive of "sliming up" of tubular steam condensers. Chlorine intermittently applied to the cooling water prevents slime deposits on the tube, thus maintaining a higher efficiency of heat transfer and vacuum in the condensers, and a lower operation cost as a result of fewer shutdowns for cleaning and fewer manhours of labor by the cleaning gang.

Chlorine in the Realm of Coagulants

Ferrous sulphate ($FeSO_2:7H_2O$), known as "copperas", has been employed in conjunction with lime as a coagulant for water, sewage and industrial wastes for many years. Mohlman and Palmer[18] suggested and tried the chlorination of a solution of copperas to produce a ferric compound which proved an efficient and economical coagulant for dewatering sludge from the activated sludge process.

Copperas, unless used in conjunction with lime, possesses no value as a coagulant, whereas chlorinated copperas requires no lime, unless the natural alkalinity of the water is extremely low. With organically colored waters, chlorinated copperas is particularly effective. On water containing clay suspension and little or no organic color, it has likewise proven effective.

During 1928 a successful full plant scale demonstration with "chlorinated copperas" has been given. The recent paper[17] by L. L. Hedgepeth, Superintendent of Filtration at Elizabeth City, N. C., gives the detailed account of the process which continues in use at this city with excellent results. One pound of liquid chlorine will oxidize between 7.8 and 8.2 pounds of commercial copperas ($FeSO_4:7H_2O$). The use of chlorine in ton container shipments materially reduces the cost of chlorinated copperas and for this reason it may be classified among the lower cost coagulants. The two methods of preparation are given in the papers of Mohlman and Palmer[18] and Hedgepeth[17].

The Oyster and Clam Industry

Recent studies[22] indicate that oysters contaminated by B. typhosus when in their natural habitat remain infectious for a period of three weeks following contamination. Purification of oysters with chlorine water was first experimentally applied in 1914 by W. F. Wells[23]. The process was more fully developed by Wells and others[24,25] during 1920–1922, but it did not attract much attention, until the typhoid epidemics of 1924 in New York, Chicago, and Baltimore were traced to contaminated oysters. Since 1924, chlorination of oysters has received increased attention and in 1925 and 1926 investigations by the U. S. Public Health Service[27] confirmed the claims made for the process. No harmful effect on taste or appearance of live unshucked oysters was noted. However, it is not recommended that dependence be placed upon chlorination to make oysters from dangerous polluted areas safe. On the other hand, oysters from areas about which there may be some question as to positive safety, at all times may be rendered safe by chlorination.

Chlorination of oysters has been likened to pasteurization of milk which enhances the safety of the milk, but does not supplant the care used in the milk plant to keep the milk up to standards of cleanliness. Chlorination of oysters constitutes a highly valuable "factor of safety" by the industry and to the consuming public.

Early in 1925, at West Sayville, L. I., one of the largest oyster packing plants on the Atlantic seaboard adopted the chlorination process and continues to use it. Within the past year or two a number of packers have equipped their plants for chlorination of oysters. The process is described by W. F. Wells[28].

---

8. Martin E. Flentje. Unusual Methods in Water Purification. Excerpts from paper before 1928 meeting, N. E. W. W. A., Water Works Engr., Dec. 5, 1928.
13. Chester Cohen. Jour. A. W. W. A., 16:1:55, July 1926.
14. L. B. Mangum. Algae Control in Reservoir by Chlorination. Munic. News and Water Works, Aug. 1928.
16. V. M. Coates. Chlorinating for Prevention of Slimes. The Paper Mill, Nov. 10, 1928.
17. L. L. Hedgepeth, Jour. A. W. W. A. 20:4:467 (Oct. 1928).
18. F. W. Mohlman and J. R. Palmer, Eng. News Record, Jan. 26, 1928.
21. Robert Cramer. Conditions at Sewage Works of Milwaukee. Eng. News-Rec., Nov. 10, 1927. Operation of Milwaukee Sewage Plant. Public Works, Jan. 1928.
22. Chas. Krumwiede and W. H. Park, Am. Jour. Pub. Health, Jan. 1928.
23. W. F. Wells, Public Health Reports, July 14, 1916.
24. F. A. Carmelia, Public Health Reports, April 22, 1921.
25. Chas. Krumwiede and W. H. Park. Am. Jour. Pub. Health, Feb. 1926.
26. W. F. Wells. Nations Health, Dec. 1923; Eng. News-Rec. June 14, 1923 p. 1047.
27. R. E. Tarbett, Am. Jour. Pub. Health, Jan. 1926.
28. W. F. Wells. Chlorination as a Factor of Safety in Shellfish Production. Amer. Jour. Pub. Health, Jan. 1929.

How the MONT-CENIS PROCESS

"There can be no question that the future belongs to the catalytic synthetic ammonia process" Rudolph Battig, general director, the Mont-Cenis Process, Westphalia, told those assembled at the Coal Conference. In this article, he points out the economic advantages of the Mont-Cenis Process.

EXISTING processes for the synthesis of ammonia differ only in their combination of the three factors; temperature, pressure and catalyst.

Another important part in the application of these processes is the profitable production of hydrogen, while the production of nitrogen itself only plays a minor part with regard to the cost price.

The starting material for nitrogen in our process is air, which is separated by means of the well-known Linde low-temperature process, whereby oxygen forms a saleable by-product. The production of nitrogen by means of the Linde process is extremely cheap and the capital cost runs very low.

For the production of hydrogen in connection with the Mont-Cenis process any source of hydrogen including water itself may be used. The current consumption for the electrolysis of water is relatively high, amounting to four and one half kilowatt hours per cubic meter of hydrogen, that is about thirteen kilowatt hours per kilogram of nitrogen. In addition to this, one and a half kilowatt hours have to be added for the synthesis of ammonia itself, so that the total amount of a works of this sort amounts to fourteen to fifteen kilowatt hours. Even if you consider, that the electrolysis of water gives the purest of hydrogen available, so that expensive chemicals are almost unnecessary, the electrolysis of water is practical economically only in those places, where very cheap hydro-electric current is available.

Hydrogen from Coke-Oven Gas

Another method for the production of hydrogen, is the Haber-Bosch process. It employs a mixture of producer gas and water gas containing about thirty per cent. of hydrogen, twenty-two per cent. of nitrogen, thirty-seven per cent. of carbon monoxide, and four per cent. of carbon dioxide. The carbon monoxide is converted, by a mixture of steam and passage at atmospheric pressure and at a temperature of about five hundred degrees over an iron catalyst, into carbon dioxide and hydrogen. This method is not at all cheap and hydrogen produced in this way cannot compete economically with hydrogen gained by separation of coke oven gas in connection with the Linde process. Lately, coke, which was used in very large quantities, is being replaced by lignite briquettes, by which means the whole process is considerably cheapened.

The latest method, which in every respect seems to offer most favorable prospects, consists in the manufacture of hydrogen from the by-product coke oven gas. This gas, as is well known, is produced in enormous quantities as a by-product of the coking of coal. Its average hydrogen content is from 45 to 55 per cent. The separation of this hydrogen is carried out at Mont-Cenis and the Hibernia works in Westphalia, where for the first time in Germany, coke oven gas has been used for the manufacture of hydrogen, by means of the Bronn-Linde low-temperature method, which in practice gives very pure hydrogen. The method of separation is as follows:

Coke oven gas, after being free from tar, ammonia, benzol and sulfur in the ordinary way, is compressed to twelve atmospheres. It consists of fifty per cent. of hydrogen, twenty-two to twenty-four per cent. methane, six per cent. carbon monoxide, two and a half per cent. unsaturated hydro-carbons, three to four per cent. carbon dioxide, eight tenths per cent. oxygen and about sixteen per cent. of nitrogen. The compressed gas is freed from carbon dioxide by washing with high pressure water and finally with caustic soda. It is then separated into its components by a low temperature method in a similar manner used for air. In the process of separation the unsaturated hydro-carbons condense first, then the methane and finally the carbon monoxide. Any remaining carbon monoxide is washed out at minus one hundred and ninety degrees centigrade by means of liquid nitrogen. The gases are cooled by means of a counter-current exchanger, through which the cooled fractions flow in the opposite sense further by means of ammonia machines, and by virtue of the evaporation of liquefied fractions in the separator itself, as well as finally, by means of nitrogen compressors, which operate a circuit in which the gas is compressed to one hundred and fifty atmosphere and allowed to expand. Liquid nitrogen is thus obtained which—as already mentioned—is used for

Produces SYNTHETIC AMMONIA

By-product coke oven gas is the source of much of the hydrogen used in the manufacture of ammonia by the Mont-Cenis process. This article describes the method of separation of this hydrogen by means of the Bronn-Linde low temperature method, as well as that of its subsequent union with nitrogen.

the final washing of the coke oven gas and for freeing this from any remaining traces of carbon monoxide. During this washing, part of the nitrogen separated from the coke oven gas, a mixture of nitrogen and hydrogen which by regulating the addition of nitrogen, can be adjusted in such a way as to be of the required proportion for the synthesis of ammonia.

I now come to a discussion of the synthesis proper, expecially as carried out at Mont Cenis.

When Haber and Bosch began their epoch making work on the introduction of synthetic ammonia into chemical industry, they had before them the task of employing pressures greater than any which had formerly been used. In this, however, they were successful after protracted trials. Their plant worked under a pressure of two hundred and thirty atmospheres, at five hundred and thirty degrees centigrade. All other workers, who have tried to make ammonia after the Haber-Bosch method, have had as their object the attainment of higher yields per passage, that is to say in essence, they have aimed at a better heat economy by means of higher and higher pressure; the percentage of ammonia obtained per passage is not so important. One great factor is the space-time-yield, that is to say, the figure which expresses the yield of ammonia per litre of catalyst per second. But the most important factor is the loss of heat and gas during the whole process.

These considerations point to two different methods of working: on the one hand, the higher the pressure, the smaller the apparatus; but it must not be forgotten, that at one thousand atmospheres, even a small leak will cause a high loss, compared to a lower pressure. Moreover, the gas does not obey completely the simple laws at such high pressure, especially with regard to compressibility. The fact is that they lead to high yields, but they bring with them increased working difficulties, increased losses and increased costs, of which the compression to one thousand atmospheres in place of one hundred is only one. The repairs of such a plant, working with a gas weighing about two-thirds of the weight of water, would naturally be much higher than one working with lower pressure.

While all other known processes have chosen the way of higher pressures, without any important decrease in temperature, we have had the good fortune to take an important step forward in the other direction, namely in decreasing the pressure and at the same time the temperature. Our process offers the possibility of working at low pressures and temperatures, and by means of highly active catalysts, whereby high yields of ammonia are obtained. The process contains therefore something that is quite new, considering all other methods. It moves the synthesis to a temperature region of four hundred degrees centigrade and to a pressure region of under one hundred atmospheres. We are in a position, at such low temperatures and pressures, to obtain just as high and even higher yields than those given by other processes. The reason for this lies in the employment of especially highly active catalysts, which give high yields even at the above named low temperatures and pressures. As a result, an essential advantage of the process consists in the simplification of the whole plant. It should be noted, that a pressure of one hundred atmospheres lies in the region of modern steam practice.

Further the low pressures employed make possible another advantage, which up to now, has not been used by any other process, namely that the heat, which comes from the reaction, is destroyed in the reaction space itself. This leads to a very uniform temperature throughout the whole ammonia converter.

Securing Uniform Temperature

Consider for a moment, what it means to produce one thousand kilos of ammonia per hour. The heat evolution per kilogram of nitrogen amounts to six hundred and sixty calories, equal to two thousand six hundred British thermal units, so that six hundred and sixty thousand calories, equal to two million six hundred thousand British thermal units, are developed in the converter, and have to be dissipated. It will be understood that these one thousand kilos of ammonia are for the most part formed just from these portions of the gas, which contain relatively

little ammonia, namely in the upper part of the converter, where the gas enters. In other words, there occurs here a great accumulation of heat, which must be dissipated. It will be seen therefore, that a low pressure process has the great advantage of permitting the installation of heat exchanger in the furnace itself, thus obtaining a high degree of uniformity of temperature within the catalyst mass, a principle which we have worked out very well.

The Synthesis Itself

The course of the synthesis is as follows: The mixture of hydrogen and nitrogen is compressed to ninety or one hundred atmospheres, and heated in exchangers to about three hundred to three hundred and fifty degrees centigrade. It then passes, after purification, into the conversion furnaces which contain the catalyst. As already mentioned, the reaction heat is in general sufficient to maintain the necessary reaction temperature of about four hundred degrees. While in almost all other processes the heating for starting the apparatus is done by electricity and so on, that is from an outside source, this is not necessary with the Mont Cenis process. In this process the necessary heat is supplied by the gas only, which for starting, is brought to the required temperature in ordinary furnaces. Nitrogen is added as a heat carrier to avoid any danger. The reaction gases—after partial combustion to ammonia on the furnace, pass through the heat exchangers and are then further cooled, the ammonia being obtained in liquid form, under such conditions that practically no ammonia remains in the circulating gases. The gas mixture, after elimination of ammonia, is recirculated through the contact furnaces by means of circulation compressors. By regulating the velocity of circulation, it is possible to regulate the percentage of ammonia formed per passage within wide limits. This regulation causes the whole process to be extremely elastic, since, at a relatively high velocity of circulation, the yield per passage drops, while the space-time-yield increases to a higher degree. This method allows the compensation of any variation, which may be caused, for instance—by changes in the volume of available hydrogen, due to irregularlity in the delivery of coke oven gas, water gas and so on, further in connection with any irregular supply of hydro-electrolytic hydrogen. The liquid ammonia, which is formed in the condensers, is expanded and evaporated, whereupon it is converted into sulfate or nitrate.

The advantage of the Mont Cenis process over all other methods may be summarized in the following: The advantages consist in the employment of low pressures and temperatures and in the decrease in the plant and operating costs, and in the simplification in the whole working, which is thereby made possible. The low pressure reduces gas losses to a minimum. It requires, moreover, a minimum amount of repairs to plant, machines and so on. The heat economy is regulated in a very advantageous way, since heating is only required during the starting of the plant and since the use of exchangers has been developed in unusual detail. The furnace needs no starting by means of electric heating and so on. The construction of the furnaces allows an extraordinarily uniform regulation of temperature within the catalyst mass. The life of the catalyst is such that a change is very seldom necessary. We have already observed a catalyst life of over eight months; and the cost for the catalyst is therefore diminished to a fraction of one pfennig per kilo of nitrogen. The whole method of working is distinguished by its smoothness and security. The best proof for this is the fact, that at this very hour the second large plant for the coking plant of Mont Cenis and Hibernia is being started.

The combustion of the Mont Cenis process with the Bronn-Linde plant for the manufacture of hydrogen allows the utilization of coke oven gas on the largest possible scale with very favorable yields of hydrogen, so that practically no losses occur. The use of highly active catalysts allows the attainment of high yields of ammonia. The yield per passage may be regulated within wide limits, by which means a great elasticity of the whole system is introduced as a compensation for variations in supplies. The separation of the ammonia is carried out by cooling to a low temperature, according to a special method, with almost complete utilization of all cold, by which means a practically complete separation of the ammonia from the mixture is obtained.

Steps in the Process

I should like to explain once more in a few words the course of our process. The coke oven gas, which comes from the coke ovens, goes through the usual process of purification by separation from tar, ammonia and benzol. It is then freed from sulfur, passes through the gasometer and from there flows to the coke gas compressors, which compress the gas to twelve atmospheres. Under this pressure the gas is freed from carbon dioxide by washing with water. It finally reaches the proper coke gas separation, where the finished mixture of hydrogen and nitrogen is formed. This mixture is compressed to about one hundred atmospheres in the high pressure compressors. It then passes into the reaction furnace. The mixture which leaves the reaction furnace is freed from ammonia in the cooling tower, while the remaining mixture is pumped back to the furnaces by circulating compressors. The vacuum pump releases the ammonia and presses part of it to the sulfate plant, and part of it to the nitrate plant. The production of sulfate is carried out in the ordinary way. In the nitric acid plant the contact furnace is shown where the ammonia is oxidized in contact furnaces, then the boilers for the utilization of the accumulated heat, finally the nitric acid tower, the neutralization—evaporation—and drying plants. The nitrate, which has formed, is mixed with the sulfate, and the process is complete.

What Will Hoover Do *with the* Prohibition Problem?

By H. C. Hallam

On the eve of the inauguration, prohibition appears to be about as badly muddled as it has ever been during the past ten years. The one outstanding fact is that Herbert Hoover will appoint a fact finding commission after March 4, to make a thorough survey of the problem.

Herbert C. Hoover

Meanwhile discussion, even argument, waxes warm, in congressional, political, official, professional dry and semi-professional wet, alcohol trade and industrial circles, over the make-up and scope of activities of the proposed commission; a possible reorganization of the prohibition forces of the government; their transfer to some other branch of the Executive Department; the money to be made available for enforcement, and sundry other phases of the situation.

Industries using alcohol for legitimate purposes, as well as politicians and reformers, wets and drys, all appear to favor the Hoover survey. So, too, do government officials having to do with enforcement. Incidentally, many representatives of the above groups have suggestions to offer as to what should be done and not be done, how some of the problems above indicated should be worked out, and who should do the job.

On the other hand, except among some politicians and professional agitators, there seems no great enthusiasm in support of shifting prohibition enforcement from the Treasury Department. Yet this is exactly what may happen, in the opinion of some observers of the storm raging around Secretary Mellon, partly because he has opposed an additional appropriation of $25,000,000 for prohibition enforcement.

Industrial interests concerned, are inclined to fear that Mr. Hoover would favor transferring prohibition enforcement to the Department of Justice, the general law enforcement branch of the government. This thought is based upon recognition that Mr. Hoover has long been an outstanding advocate of efficiency, organization, co-operation and co-ordination in government as well as business. Not that transfer of prohibition enforcement would necessarily lead to these results; quite the contrary, in trade opinion,—but, at first blush, it might appear so.

And the next President, with many matters, perhaps more important, pressing upon him, can hardly be expected to have first-hand knowledge of the situation. Mr. Hoover may recommend the transfer of enforcement to the Department of Justice, in an early message to the new Congress, if not in his inaugural address, on account of Secretary Mellon's increasing unpopularity with drys, and in view of the general expectation that he will retain his position in the Hoover cabinet. However, Pennsylvania political friends of Mr. Mellon say he has long wanted to travel around the world, and that he has recently bought a yacht. The logical thing, it is pointed out among prohibition officials is to wait and see what facts the commission finds, before undertaking any reorganization of the prohibition service.

After conferences between Mr. Hoover and Senators Jones and Edge, representing, respectively, dry and wet groups in the Senate, it was agreed to drop plans for an investigation of prohibition by a congressional committee, since the president-elect plans to name a commission after he enters office. The understanding is that this commission may be made up of seven to nine members. From sources close to Mr. Hoover comes information to trade circles that he wants persons on the commission not identified actively with either the wet group or the dry group.

Opinions differ as to what the makeup of the fact finding commission's personnel should be. Some think that industrial groups should be represented by one or more members of the commission, while others prefer that the survey shall be made by persons wholly unidentified with interests most directly concerned in the problem.

Already, however, Dr. Harrison E. Howe, has been nominated for the fact finding commission, by Dr. Clarence True Wilson, head of the Methodist Board of Prohibition, Temperance and Public Morals. Dr.

Howe fully realizes the importance of alcohol in the chemical and related industries. He was a member of the old Alcohol Trades Advisory Committee, organized by Commissioner of Internal Revenue D. H. Blair. Personally, Dr. Howe is the son of a minister and a prohibitionist. To him alcohol is simply a chemical.

Should Distillers Be Represented

A suggestion heard in chemical circles is that the commission should include a representative of alcohol distilling interests. It is presumed, of course, that this would be eminently satisfactory to the distillers. This suggestion is vetoed with qualifications, on the ground that certain alcohol producing interests are reported to be so closely related to other large industrial and financial interests that they are prejudiced in favor of what others would regard as undue restriction upon the production, distribution and use of industrial alcohol for legitimate purposes. E. C. Brokmeyer, representing certain drug and other interests, nominates Samuel C. Henry, president of the Drug Trade Conference, secretary of the National Association of Retail Druggists, and former member of the Alcohol Trades Advisory Committee, as a "good all around man."

"The industries, trades and professions" said Mr. Brokmeyer, "especially the medical and pharmaceutical professions, obligated to use liquors of all kinds including alcohol for industrial and medicinal purposes, certainly should be represented on the commission, if justice is to be done in carrying out the permissive provisions of the Volstead Act."

Mr. Brokmeyer and some of his colleagues feel that members of the fact finding commission should "know something" about prohibition problems and they point to the jury of award in the Durant prize contest as illustrating what may be expected of a commission made up of men who "know nothing" of the subject.

On the other hand, another trade representative prefers a commission of such persons as a judge or prominent member of the bar, a newspaper man, a great organizer, executive or engineer, the head of a large industrial institution—a man of the type of the late Judge Gary or Charles M. Schwab; taken from the class of people who are isolated from the prohibition controversy, so that they would not entertain "pre-views".

Men who know Herbert Hoover's habits of mind and methods of organization, believe that his fact finding commission will include at least one outstanding lawyer, business man, scientist, labor leader, probably an engineer, perhaps a medical man in addition to a scientist, and, not unlikely, a woman. The feeling is that he will not be as "a bull in a china shop" in the prohibition problem.

Prohibition officials agree with Dr. Charles H. Herty who has predicted that within a few years the legitimate consumption of industrial alcohol will greatly increase. Dr. Herty declared that the use of alcohol for chemical purposes has only begun and that such enormous quantities are required for rayon, lacquers, and other products that the alcohol requirements will multiply within five years, and officials are willing to admit that perhaps half a billion gallons will be needed annually.

Not diversion of industrial alcohol, but production of alcohol from corn syrup, it is predicted, will be found one of the largest problems reported by the fact finding commission. This and smuggling, chiefly from Canada, are declared to be the principal sources of supply for the illegitimate trade. And what will be done about the corn syrup and sugar angle of the situation is difficult to see. This product moves freely in lots of many carloads without restriction, and officers have not been able to keep track of it sufficiently or to prevent its use in making alcohol on a large scale for the bootleg trade. Corn sugar is cheap and makes good alcohol by an easy and inexpensive process. Under the circumstances, trade representatives ask, why should the illegitimate trade go to the trouble and great expense of renaturing alcohol.

Officials having to do with administering the prohibition law are satisfied with the prospect of a fact finding commission. Their view is that they want the real facts; they hope the facts will be found by the commission, and they think that the facts will be helpful to the prohibition organization and to the public.

It is gossiped that Secretary Mellon has indicated to Mr. Hoover that he can not continue in the cabinet unless prohibition enforcement is transferred from his department. According to this report, Mr. Mellon is tired of being the subject of attack by agitators and fanatics who charge that he has not really tried to enforce prohibition. On the other hand, there is rumor in prohibition official circles that Mr. Mellon has indicated he would oppose transfer of prohibition to the Department of Justice. At one time, it is understood, Mr. Mellon favored such transfer, but further consideration resulted in his changing his mind.

Jurisdiction Transfer Considered

From the trade standpoint, at present, such transfer would be a mistake. At one time the chemical industry favored the transfer. That was when Commissioner Haines headed the dry forces and was charged with being under the domination of the late Wayne B. Wheeler. Since the administration of Commissioner Doran began, however, industrialists have changed their minds. It is largely a matter of the personal equation. Dr. Doran co-operates fully with the industries and they reciprocate.

The present situation is delicate. The fear and expectation is that in the event of the transfer, not Dr. Doran, but an assistant attorney general, probably Mrs. Willebrandt, would be in charge of prohibition enforcement. Dr. Doran might continue as a chemical

or industrial expert, or in charge of permissive features of the work, but the directing power would be above him. While a conference of federal court of appeals judges a few years ago recommended transfer of prohibition enforcement to the Department of Justice, that fact has not convinced many of those in touch with the situation that this is what should be done. The late Mr. Wheeler, always a leading antagonist of alcohol industries, is now cited as an authority why prohibition should not be transferred from the Treasury Department. The view of officials, who do not care to be quoted, is that transfer of prohibition enforcement would be "merely a change, but not a reform." The customs service, coast guard and internal revenue bureau are all in the Treasury Department with the Prohibition Bureau, each of them have to do with enforcement, the customs and coast guard against smuggling, the revenue bureau in connection with tax on liquors. Better co-ordination and co-operation are possible then if prohibition work were divided between two departments. Permissive features of the prohibition bureau could hardly be transferred to the Justice Department if enforcement features were, it is declared. There would thus be a split in the work of the prohibition bureau itself. There would be duplication of work, cross purposes, and the necessity of business interests taking up their alcohol matters with two departments with resulting loss of time, double work, and expense, officials say.

The Department of Justice has been the judicial and the prosecuting branch of the government. It has not been an investigating or administrative branch. To have the investigating officer, prosecutor and judge all in the same branch of government is not considered safe. Moreover the Department of Justice lacks the civil service system, except among minor employees, hence the advantages expected from applying civil service rules to the Prohibition Bureau would be lost by a transfer.

Another suggestion of reorganization would involve transfer of prohibition to the Public Health Service, but this would be vigorously opposed by trade interests as was the proposition to transfer food and drug law enforcement to that branch of the government a year or two ago.

Prohibition officials would like to be left alone to carry out present policies for four years. What are needed now to secure more complete prohibition, according to officials, are: first, more money, men and equipment, Secretary Mellon to the contrary notwithstanding: second, better co-operation of states and municipalities; third, education and better co-operation from the public. The record of accomplishment is officially regarded as good, considering the fact that there are only 2,000 prohibition "policemen" or only one to every 1,800 square miles and every 60,000 people.

The Industry's Bookshelf

Artificial Silk, by Valentin Hottenroth, 409 pages, Isaac Pitman & Sons, New York, $8.50 net.

A translation from the German which is said to be a complete treatise on the theory, manufacture, and manipulation of all types of artificial silk.

Soluble Silicates in Industry, by James G. Vail, 440 pages, Chemical Catalogue Co., New York.

A technical study of the soluble silicates, being one of the American Chemical Society Monograph Series.

The Technology of Low Temperature Carbonization, by Frank M. Gentry, 400 pages, The Williams & Wilkins Co., Baltimore.

Said to be the first book in America dealing exclusively with the subject of low temperature carbonization and the first relating solely and comprehensively to its technology.

Principles of Economics, by Frederic B. Garver and Alvin H. Hansen, 726 pages, Ginn & Co., New York, $3.00 net.

A textbook for the first course based on the application of economic principles to the interpretation of contemporary economic problems.

Principles of Scientific Purchasing, by Norman F. Harriman, 300 pages, McGraw-Hill Book Co., Inc., New York.

A concise account of the fundamental principles which could generally apply to the purchasing function.

Farm Products in Industry, by George M. Rommel, 269 pages, Rae D. Henkle Co., Inc., New York, $3.50 net.

A survey of the industrial utilization of farm products and the "first book ever printed on cornstalk paper."

Modern Physics, by Charles E. Dull, 778 pages, Henry Holt & Co., New York.

A textbook for students of elementary physics, well-illustrated and with problems at the end of each chapter.

Commercial Law by Cases, by Harold E. Cowan, Margaret F. Shea, and George A. Morin, 380 pages, Henry Holt &Co., New York.

A textbook designed to meet the needs of secondary school law course developed by the case method.

Technical & Industrial Spanish, by Antonio Alonso and P. R. Hershey, 325 pages, D. C. Heath & Co., New York.

Spanish readings along scientific and industrial lines for students who have mastered the essentials of the language.

The New Way to Net Profits, by Fred W. Shibley, 213 pages, Harper & Bros., New York.

A study of scientific administration which is said to be the science of attaining and perpetuating net profits.

Random Thoughts of a Man at Fifty, by John Harsen Rhoades, 125 pages, Knickerbocker Press, New York, $1.50 net.

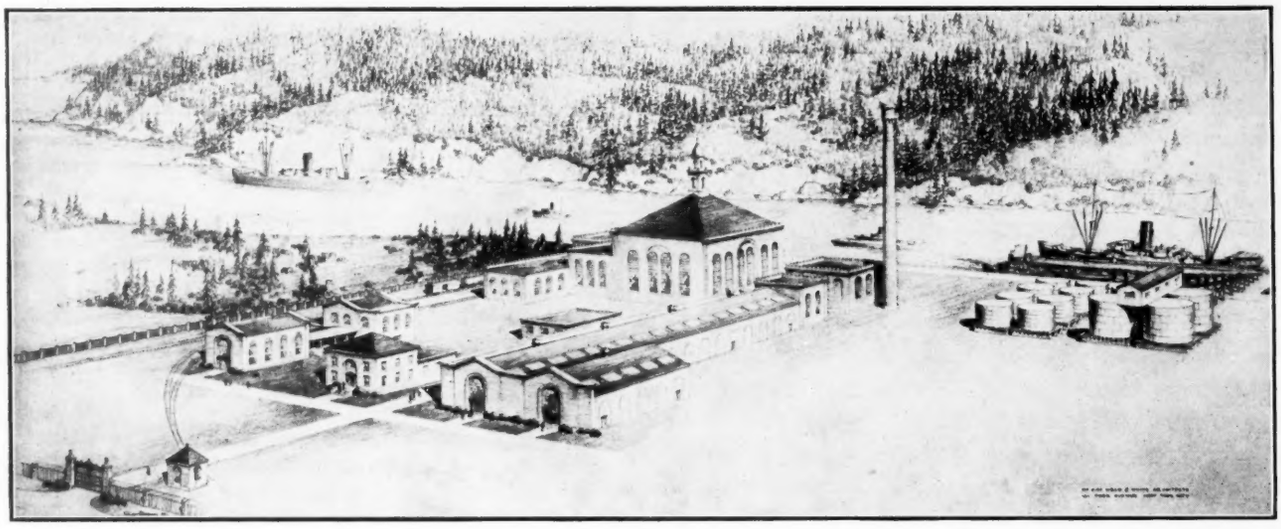
Some thoughts on everyday subjects in verse and prose by a business man who stopped to think at fifty.

Industrial Carbon, by C. L. Mantell, 408 pages, D. Van Nostrand Co., New York, $4.50 net.

A scholarly discussion of the technologic applications of elemental carbon, aside from its use as a fuel.

The Consumer Looks at Advertising, by Paul T. Cherington, 196 pages, Harper & Bros., New York, $2.50 net.

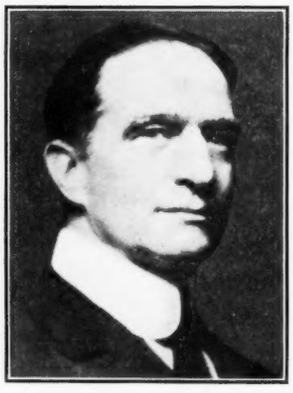
A "defense" of advertising based on the premise that it makes for an enlightened consumer.



CAUSTIC and CHLORINE

on the Pacific Coast

CHEMICAL developments on the Pacific Coast are tangible evidence of the industrialization of that region. For as supply surely follows demand, so the production of industrial chemicals is proof positive of manufacturing activity. The chemical industry's expansions form therefore, an interesting commentary on industrial development, an illuminating footnote to the economic history of the country.



ELON H. HOOKER
President
Hooker Electrochemical Co.

The big, new plant of the Hooker Electrochemical Co., which has just come into production at Tacoma, Wash. is a climax of a constantly increasing chemical manufacturing activity west of the Rockies. With an initial output of 30 tons of 76% caustic soda and 26 tons of cell chlorine daily, this new Tacoma plant represents an investment somewhat in excess of a million and a half dollars and embodies not only the very latest in technological skill, but also that intangible, yet invaluable asset built up in a quarter of a century operating experience as electrolytic producers of alkalies.

Tacoma's selection, after consideration of nine different Pacific Coast points, was determined largely by the facilities it affords for power and raw materials and its proximity to the important pulp and paper consuming industries, important customers of chlorine, and the advantages for shipment by water not only abroad, but also to the Californian markets. The site finally chosen is on the east side of the Tacoma Tide Flats, where twenty acres were purchased from the Foundation Company, with a frontage on the Hylebos Waterway, with sufficient depth, even at low tide, to dock ocean-going ships. Construction work was begun the middle of last August, under the auspices of the Austin Company, and the completion of the plant in the record time of six months bespeaks not only high efficiency on the part of these construction engineers, but most intelligent planning ahead on the part of the Hooker executives.

Electric power is received as alternating current at 13,000 volts, 4,000 volts and 110 volts. The 13,000 volt current is stepped down by air cooled transformers to approximately 350 volts and is then changed to direct current by the use of Westinghouse rotary converters. Each converter has a capacity of about 2,000 H. P. and supplies the necessary electricity for the decomposition of the brine solution in the cells. The 4,000 volt current is stepped down also by the use of transformers to 440 volts for the operation of the motors throughout the plant while the 110 volt supply provides for lighting. In the Cell House, a 350 foot building, are control switches by which the rotary converters are operated so that in the

Power Station no attendance is required. Steam utilized in the evaporation of the caustic liquor and in other process work through the Plant is supplied by two Babcock and Wilcox boilers fired either by mill refuse or by oil. The oil burners are placed at the rear of the boilers while the Dutch oven and feeding apparatus for mill refuse are placed at the front end of the boilers. Although the equipment is designed for high steam pressure the normal operating condition at the start will involve about 150 pounds pressure. In a separate building, the caustic house, is carried on the purification of the caustic liquor which comes from the cells. Compression and refrigeration in the manufacture of liquid chlorine are housed in separate but adjacent buildings between which are located storage tanks tested to high pressure and heavily insulated.

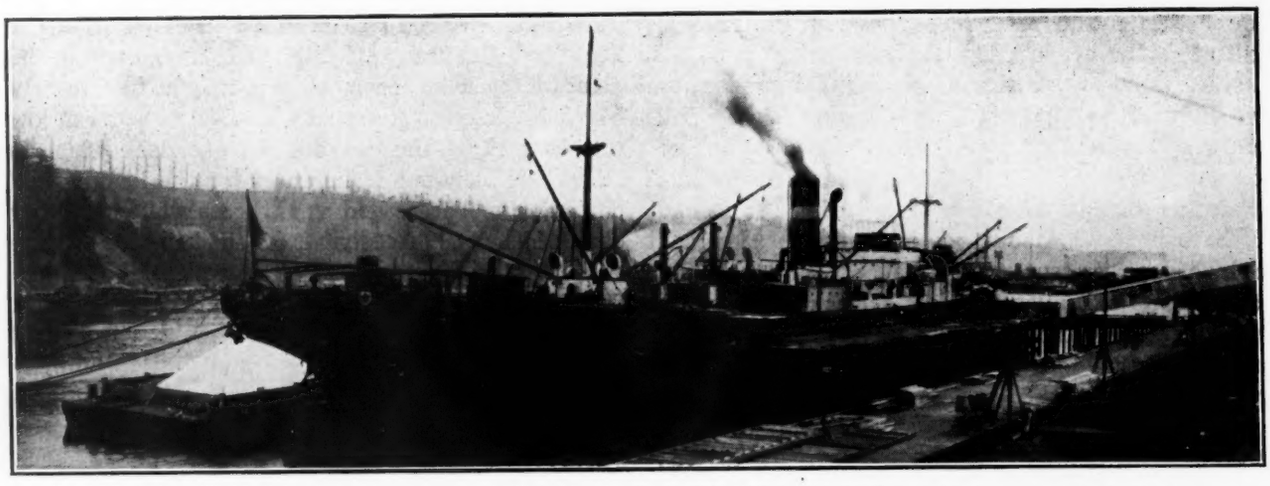
The tanks used for the storage and handling of various liquids is mostly located outside of the buildings, part of the tanks being of riveted construction and part electric welded. The salt storage tanks have a capacity of about 300,000 gallons each while the tanks utilized for the purification and storage of brine are approximately 75,000 gallons each. There are two 100,000 gallon fuel oil storage tanks surrounded by proper retaining walls. The tankage installed has a total capacity of about two and a half million gallons.

Two four million gallon per day water pumps have been installed which draw salt water from the adjacent waterway. The fresh water required is supplied from the mains of the City of Tacoma. The general facilities include a two story office, a machine shop in which the complete absence of shafting and belting is noticeable because of the fact that all machines are driven by directly connected motors, a locker room of modern sanitary construction and various loading platforms for the receiving and shipping of materials. The railroad sidings are not electrified but the cars which are delivered by the Belt Line Division of the Department of Public Utilities are handled within the plant by a gasoline locomotive. Dredging has recently been completed to give thirty-five feet of water at low tide at each of the two docks; one dock which is about 100 feet long is intended for the loading and unloading of barges and small boats while the other dock which is 300 feet long is for the handling of large vessels. The Boiler House stack which is unique in design rises to a height of 200 feet above the ground.

The process employed is based on the Townsend Cell, the patents of which are owned by the company and are operated on large scale at Niagara Falls and in Japan. Whereas most electrolytic cells are operated at loads from 1,000 to 2,000 amperes, the Townsend Cells can be efficiently run at over 5,000 amperes.

The two main raw materials are electric power and salt. The electric power is supplied under a contract with Tacoma, and originates at the city's large Cushman hydro-electric power plant where an extensive enlargement is now under way. Duplicate transmission lines, transformers and other equipment are provided so that there may be no interruption in supply. There are many sources for the salt required in the operation of the Plant, among which may be mentioned, New York State, Louisiana, California, Spain, Italy and China. In view of the fact that the company's plant is located on deep water, it is possible to receive shipments by ocean-going vessels as well as by those of the coastwise type. Considerable interest was created in shipping circles in the Northwest when the steamship Anglo-Indian arrived at the Company's dock in Tacoma on Dec. 12, bringing about 8,000 tons of salt from Torrevieja, Spain. Special unloading, handling and storage facilities had been provided so that the unloading of this cargo was accomplished at a rate of over 1,000 tons a day. The salt is stored in huge steel tanks where enough can be held to operate at full capacity for many months.

This view of the Tacoma plant, taken in December, 1928, shows just what progress had been made in the construction to that time.



Unloading a cargo of eight thousand tons of Spanish salt from the "S.S." Anglo-Indian at the Company's dock No. 2.

Caustic Soda will be shipped as solid fused, flake, or as liquid; the solid in steel drums made up at the plant and which contain approximately 700 pounds. The flake caustic is placed for shipment in similar drums about 400 pounds. Liquid caustic will be shipped in tank cars, by tanks mounted on barges, or in tank steamers. The company plans to distribute a considerable portion of its liquid caustic soda in tank steamers at its Tacoma dock, transferring to a storage station now under construction in Los Angeles harbor, and from this station shipping in 8,000 gallon tank cars to the consumer. Muriatic acid shipped in small quantities in glass carboys containing about 115 pounds, but in larger in rubber lined tank cars holding 35 tons or more. In the East the Company was one of the first to develop the use of rubber lining for the handling of Muriatic Acid. Liquid chlorine is shipped in containers varying in size from 100 pounds to 60,000 pounds. The smaller containers which are known as cylinders are of two standard sizes, one containing 100 pounds net and the other containing 150 pounds net.

An unusual feature of the new Tacoma plant is the care and attention given to the architectural features of the buildings. The result proves that a chemical plant can be so built as to prove attractive as well as efficient. The architectural features were designed by McKim Mead and White of New York, while the layout of the buildings and the arrangement of apparatus was done by the Company's own engineers. Surrounding the whole property is a fence of unique design using brick posts with wooden pickets between. Perhaps the association of the Hooker Electrochemical Company's officials with two of the most beautiful scenic wonders of the world, Niagara Falls and Mount Rainier, has led to the erection of a beautiful feature of the plant in the gilded tower and dome which surmounts the lofty walls of the Caustic Building.

The general supervision of the sales work of the Company is in the hands of H. M. Hooker one of the three Vice-Presidents, while A. H. Hooker Jr. is Sales Manager for the Tacoma Plant. The President of the Hooker Electrochemical Company is Elon H. Hooker, who has occupied this position since the Company was first organized. There are three Vice-Presidents, Messrs. Willard Hooker, Harry M. Hooker and E. R. Bartlett. E. R. Bartlett occupies the position of Works Manager, having charge of the operation of both the Niagara and Tacoma Plants. At Niagara Falls R. L. Murray is superintendent, and J. A. Flynn occupies a similar position at Tacoma. The design and construction of the Tacoma Plant has been carried out by J. M. Rowland, Chief Engineer. A. H. Hooker, Technical Director, and L. A. Ward, Secretary, complete the list of officers.

The capitalization of the Hooker Electrochemical Company at present outstanding consists of $2,700,000 six per cent. cumulative Preferred Stock par value $100 and $2,500.00 of Common Stock, also of $100 par value on which dividends at the rate of six per cent. per annum are now being currently paid. The bonded indebtedness is approximately $2,500,000 of which $1,500,000 six per cent. series B Bonds were recently sold.

A new trend is evident in chemical exports by the United States in 1928, according to the Chemical Division, Department of Commerce. This has been toward larger sales in the Far East, attainment of Canada as the largest individual consumer of American chemicals, and somewhat reduced shipments to Europe, reflecting heavier production of chemicals there.

Japan purchased $9,500,000 and China $3,500,000 of United States chemicals during the first nine months of 1928, considerably more than in the corresponding period of 1927. Japan is now the fourth largest single customer for United States chemicals. More than $900,000 worth of caustic soda alone was shipped to that country in the first nine months this year. Japan's chief purchase is fertilizer. China's purchases are largely dyes, and totaled $1,500,000 in the nine months.

The United Kingdom continued to be a heavy purchaser in the first nine months of 1928, but sales to France, Germany and the Netherlands showed heavy decreases.

Java imported 1,198,090 kilos of soda ash in 1927, of which 14 per cent. was furnished by the United States and 80 per cent. by Great Britain. During 1926 Great Britain's share of this trade was 93 per cent., reports Consul E. M. Groth, Surabaya.

The World Wide Search For Potash Supplies

Lake Chad, in the heart of equitorial Africa; the plains of Texas and New Mexico; the steppes of Russia --- all are being actively prospected to-day in the determined efforts of all the leading nations to discover and develop new sources of potash which will free them from the Franco-German monopoly. Herein are reviewed the late developments in this hunt for this vital chemical raw material.

CUTTING off the World from the German potash supply during the World War left its indelible mark in every country which has the slightest conception of the important role played by this chemical raw material.

By recapture of Alsatian territory in the recent hostilities, France has had its potash problem reduced to a minimum by coming into possession of the rich deposits of this territory. France is in the enviable position of having potash not only for its own consumption, but also to offer effective competition to Germany in foreign markets. Thus for the first time in the history of the potash industry another nation is in a position to dispute, even partially, Germany's dominance of this market. However, realizing that nothing can be gained by devastating competition, these countries have established a joint sales policy, each being allocated a certain portion of the World's markets.

Conflicting reports are made about the exploitation of the Polish deposits. On one side, we hear that the inaccessibility of these beds precludes their being considered as serious competition to the Franco-German industry for many years to come. On the other hand, it is stated in some quarters that the high quality of the Polish deposits will sooner or later induce capital to provide rail facilities for transport to seaports. Until this is actually consummated, Poland is hardly to be considered a serious factor in competition for World trade.

Great Britain has been seeking actively throughout its colonies to unearth a source of potash independent of its competing neighbors. In this connection, Sir Roger Onslow, writing in a recent issue of *Chemical Age*, London says, "The use of potash for agricultural purposes has largely increased of late years, probably owing to the improved agricultural scientific education carried on by the efforts of the Board of Agriculture and the propaganda on the use and value of artificial manures of Imperial Chemical Industries.

It would appear to be advisable for some expert, to investigate the commercial possibilities of the potash deposits at or near Lake Chad in Africa. Potash is an important article of inter-native trade in Nigeria, the Cameroons, and probably over a much larger area of Africa. It can be purchased in the native market of any town in Nigeria, or at any rate that was the case in 1903-4 and in 1916-17.

"Lake Chad, situated at the junction of Nigeria, French Sudan, and the Cameroons consists of two sheets of water, separated (or joined) by a tract of mud and marsh, in a very shallow depression. Except on the Eastern side, which is protected by sand dunes, the water level is so little below the level of the surrounding country that a strong Harmattan wind, such as regularly blows at a certain season, will cause the water to run like a tide inland sometimes for over two miles. The lake or lakes are principally fed by two rivers, the Shari and the Yobe. There is no permanent outlet.

"In his book *From the Niger to the Nile*, Lieut. Boyd Alexander says that, though he found the area covered by water in 1904 smaller than previous explorers had found it, he does not think it is drying up. He found the northern lake 30 and the southern 45 miles across. The water is very much impregnated with potash and unpleasant to drink, but there are plenty of fish, possibly only where the inflowing rivers keep the water more pure.

"I take the two following extracts out of *From the Niger to the Nile*,—"Here (at Wunnda on the Kanem, N. E., coast) I saw a large amount of potash which had come a five days' journey from the interior of Kanem. The potash is made in flat cone-shaped

blocks, weighing 30 lbs. each, eight of which are sold in Bornu for a dollar." From this it would appear that the potash is mined somewhere in Kanem. The dollar referred to is the old Maria Theresa silver coin, then in common use in parts of West Africa. Again, page 105:—"This (the Shari mouth on the south of lake Chad) is the real home of the Budumas, who are a prosperous people, gaining their wealth by fish and potash, and counting it in slaves and cattle." The mouth of the Shari is on the opposite side of the lakes from the Kanem country and it was generally thought in Nigeria in 1904 that the Budumas obtained their potash from pools left by the receding waters in the dry season, the water in such pools subsequently drying up and leaving deposits of potash.

Potash at Lake Chad

"Whether by mining the original source or by some method of evaporating the waters of Chad in shallow tanks by sun heat, as is done to obtain salt from the sea on the Californian coast, there is no doubt that large supplies of potash could be obtained from the Chad district. By now, doubtless, information as to the deposits of potash, and the native trade in it, could be obtained both from our Colonial Office and from the French authorities.

"As to transport, the potash could be taken in motor lorries to some point on the Gongola or Benue rivers, which are both navigable during rather more than half the year for shallow draught barges. The Gongola joins the Benue and the latter joins the Niger, and the potash could thus be cheaply conveyed to ocean steamers at Forcados at the mouth of the Niger, and, in all probability, a cargo of some sort taken up country on the return journey. The barges could be taken down stream as far as Lokoja, at the junction of the Benue and Niger, by natives using poles; from there to Forcados towing would be necessary to guide them, the water being too deep for the use of poles."

The means of transportation outlined in the last paragraph is both tedious and expensive and without knowledge of actual conditions in Africa for this all important phase of figuring the cost of raw materials it appears that the Polish mines are about equally well situated to serve the world at the present time. This resume of the situation at Lake Chad does indicate that Great Britain is leaving no stone unturned in its effort to become independent of Germany and France for all time.

Much ink has been poured over the potash beds in our own country. Some may be identified as propaganda; but there is no disputing the fact that traces of large deposits have actually been found in Texas, New Mexico and bordering territories. In addition, production of potash at Searles Lake in California is a reality and preparations are being made for an increase in operations which will again redouble the output.

Commenting on our American potash activities *Commerce Monthly*, the organ of The National Commerce in New York says, "In the United States there is a prospect of developing a sizable potash industry. In 1913 the United States was entirely dependent upon Germany for its requirements of potash; consequently during the war, it became necessary to develop a home industry. By the year 1918, this country had reached a total production of 200,000 tons of crude salts with a potash content of 55,000 tons amounting to one-fifth of its prewar requirements. About 73 per cent. of the output was then furnished by natural brines, with the largest quantities produced by the Nebraska lakes and Searles Lake in California. Transportation to the eastern part of the country is expensive; however, with the growth of demand for potash in the West, Searles Lake will have a prominent place among the centers producing potash.

"After the war most of the American plants had to close down because of foreign competition and production fell to 10,000 tons of pure potash. The following year, however, showed the beginning of a revival in the industry. By 1926 the production had further improved to 23,000 tons. Last year (1927) was one of exceptionally rapid development when, within one year's time, the United States produced 86 per cent. more pure potash than in 1926. This sudden progress might be attributed not only to the improvement in the process of recovering by-product potash but also to the exploitation of very high grade salts.

"In the meantime the Federal Government had made limited appropriations for the survey of mineral potash deposits in Texas and New Mexico. Because potash was discovered in the Alsatian fields in drilling for coal and oil, more than ordinary interest was attached to the incidental discovery of this mineral in New Mexico and in western Texas while prospecting for oil.

Deposits in Texas

"The area of Permian salts, which in Germany extends over 24,00 square miles, apparently spreads over 70,000 square miles in Texas and New Mexico. Though potash has not been discovered over the whole territory, it is probable that the entire region bears this mineral. The ground formation here is of the same geological age as the one in Germany; and the salts found so far are of the same nature as those of Stassfurt. Year by year new deposits have been found. Recently an important deposit of sylvite and polyhalite was discovered in southeastern New Mexico. Nearly all of the potash salts so far found are within the boundaries of the Permian salts territory, the location of which is much the same as the new fields for oil prospecting. This means that the territory has a good chance of exploration.

"Looking at the Texas potash area as a whole it is apparently a region of great future promise. The Permian area there is almost three times as large as the

Stassfurt region in Germany and bears potash in some cases superior to that in the latter region. It is possible that the mining can be done more advantageously since the depth of the beds is less and also since there is a prospect of striking oil at the same time. Refining plants could be established in proximity to the oil wells or could utilize natural gas for fuel. Such factors may reduce the cost of production.

Transportation costs are another important consideration. The bulk of commercial fertilizers have so far been consumed in the eastern and southeastern parts of the United States. Transportation by water is of course much cheaper than land transport, but in order to get to any port Texas potash would have to travel by land for a distance of about 400 miles. That distance of 400 miles constitutes a major item in the transportation cost.

The greensands of New Jersey are another potential source of potash and the resources here are abundant. The water-soluble potash content of the sands is very low but although its availability as plant food is contested it seems to be real. The greensands marl belt averages about 2.1 miles in width and 40 feet in thickness and extends across New Jersey from Sandy Hook to the Delaware River near Salem, a distance of about 100 miles, with an average content of 6.6 per cent. pure K_2O. These beds are estimated to contain over 250 million tons of potash that could be mined by open-pit methods, which are much less expensive than underground mining. If the latter were used however the available quantity of potash would be enormously increased.

Industrial Sources

"Apart from these natural supplies, potash is also recoverable from many industrial processes. The alcohol industry has as yet been the only commercially successful source of supply, producing in 1927 nearly 4,000 tons. But potash physically obtainable as a by-product of American industries could supply a considerable proportion of the home consumption. From the sugar refined in the United States annually, potash recovery might amount to 7,000 tons. From blast furnaces 80,000 tons of potash might be obtained. The cement mills of the United States are said to be capable of producing annually, as a by-product, 85,000 tons of potash.

"Undoubtedly Germany has the largest deposits so far known and put under actual exploitation. Almost all of its potash comes from mines. On the other hand, in the United States potash is mainly a by-product, or a product of salt lakes. Though the United States has reached only the stage of exploration and experimentation with its resources in this field, the possibilities of developing a large potash industry are good. It may be that if present efforts in the line of research are prolonged for a few years to come, this country will assume a leading place in the field of producers."

Who's Who In Chemical Industry

Bacchus, Thomas W., vice-president, Hercules Powder Co. Born, Sandbach, Eng., 1862; mar., Mary E. Jones, Lima, Ohio, June 1896; children, 1 son, 2 daus.; educat., Eng. pub. schls. Hercules Powder Co., salesman, 1893-94; Hercules Torpedo Co., mgr., 1895-99; Great Northern Mfg. & Supply Co., vice-pres., 1899-1902; E. I. du Pont de Nemours & Co., supt., Repanno Works, 1902-12; High Explosive Dept., genl. supt., 1912 until dissolution, 1913. Inventor of gelatin dynamite machine now used by du Pont, Hercules and Atlas Powder Co's. Clubs: Wilmington, Wilmington Country, Bnkrs. of Amer. (N. Y.)

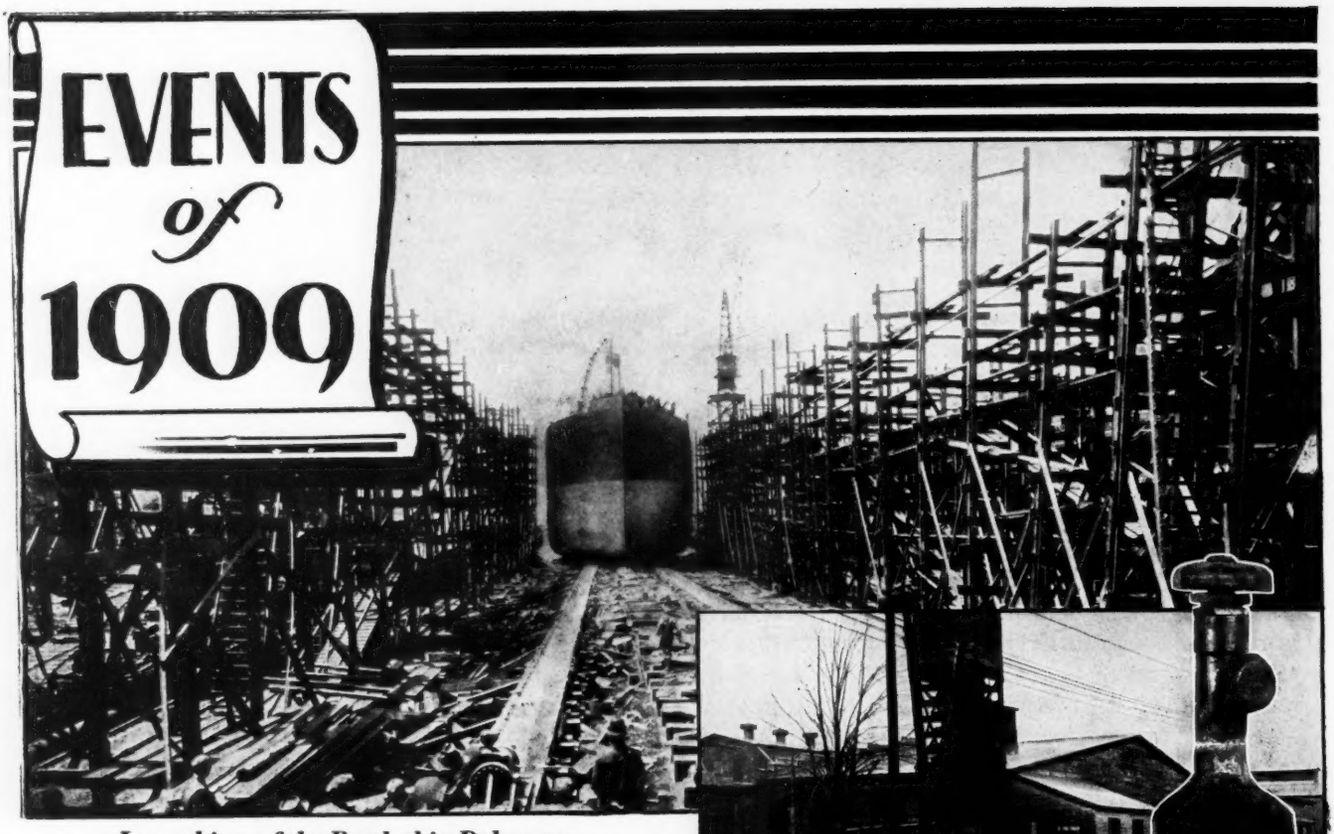
Cabot, Samuel, president, Samuel Cabot, Inc., Born, Brookline, Mass., 30 Apr. 1884; mar., Nancy Graves, Newburyport, Mass., 16 Oct. 1909; children, 3 daus., 1 son; educat., Harvard, A. B., 1906. Mass. Inst. Tech., 1908. Saml. Cabot, Inc., pres. since 1910; New Eng. Felt Roofing Wks., pres. since 1922; Polygon Prods. Co., pres. since 1922; Sulphur Napthol Co., dir. since 1924. Major 303rd Inf. & 106th Inf. Patents and papers on paints, varnishes, coal tar prods., and colloidal chemistry. Clubs: Somerset, Tavern, Harvard (N. Y.), Harvard (Boston), Chemists. Address: Samuel Cabot, Inc., 141 Milk St., Boston, Mass.

Dabbs, John Lawrence, southern sales manager, Dyestuffs, Dept., E. I. du Pont de Nemours & Company. Born, York, S. C., 8 Oct. 1874; mar., Zoella Baker (dec.), Rock Hill, S. C., 30 June 1892, 2d, Sallie A. Pettus, Charlotte, N. C., 1920; children, 1 son, 1 dau.; educat., Chestnut Grove Acad., I. C. S. Victoria Cotton Mills, Rock Hill, S. C., asst. supt.; A. Klipstein & Co., southern sales mgr., helped to erect and manage a factory at Chrome, N. J., manufacturing sulphur black, 1915-16; National Analine & Chem. Co., southern sales mgr., E. I. du Pont de Nemours & Co., southern sales mgr., May 1919 to date. Pres. D. & M. Co., Dabbs Paint & Ducco Co., Charlotte, N. C. Memb., Amer. Assn. Textile Chems. & Colorists, Amer. Chem. Soc., Amer. Cotton Mfrs. Assn., Southern Textile Assn., Charlotte Chamb. Comm., Potentate Oasis Temple, A. A. O. N. M. S. 1916, 32d deg. Mason, Knight Templar. Clubs: Southern Mfrs., Charlotte Country, Cabarrus Country, Myers Park, Rotary, Charlotte Engrs., Goodfellows. Hobbies: golf, radio. Address: E. I. du Pont de Nemours & Co., 232 West 1st St., Charlotte, N. C.

Emery, John J., president, Emery Candle Co. Born 28 Jan. 1898; mar., Irene Langhorne Gibson, 31 August 1926; children, 1 dau. Thos. Emery Son's., Inc., vice-pres. U. S. Naval Aviation, Ensign. Memb., Publ. Recreation Com., Cinn. Cinti. Chamb. Comm.; International Chamb. Comm. Address: Emery Industries, 115 East 4th Street, Cincinnati, Ohio.

Orem, Edward Addison, sales manager, New York Branch, E. I. du Pont de Nemours & Co. Born, Baltimore, Md., 10 Dec. 1892; mar., Nettie A. Back, Baltimore, Md., 2 June 1915; children, 3 daus.; educat., Baltimore Law Schl., Univ. Md. in Law. Balt. & Ohio R. R. Co., operating traffic & law depts., 1910-14; E. I. du Pont Co., traffic & sales depts., 1914-24, Sales Mgr., N. Y. Branch, in acids and heavy chemicals, 1924 to date. 1917-18 at Washington; special duties relating to explosives matters for the Govt. Clubs: Delaware, Locust Grove Country, Drug & Chem. du Pont Country, Salesman Assn., A. C. Ind., Drys Salters (New Eng.). Hobbies: golf, tennis, football. Address: E. I. du Pont de Nemours & Co., 256 Vanderpool St., Newark, N. J.

EVENTS of 1909



Launching of the Battleship Delaware, Newport News, Feb. 6, 1909

First plant and cylinder containing first pound of Liquid Chlorine produced in the U. S. in 1907

Over 20 Years Ago E B G Pioneered in the manufacture of Liquid Chlorine

THE significance of some events cannot be estimated at the time of their occurrence. Certainly this applies to Liquid Chlorine, first manufactured in the United States by E B G.

E B G is proud to have occupied this role of assistant to industry, through the introduction of Liquid Chlorine.

The year of 1909 witnessed the launching of the battleship "Delaware", which represented a powerful increase in our naval force. 1909 also marked the commercial introduction of Liquid Chlorine by E B G, a mighty addition to the efficiency of many industrial processes.

In the short span of 20 years, E B G Liquid Chlorine has progressed from the stage of a chemical "baby" to the performance of a giant. And the pioneer spirit . . . the ability and willingness to initiate improvements and assist in their development . . . are characteristic of the E B G organization today.

EBG

Liquid Chlorine

PLANT:
Niagara Falls, N. Y.

Electro Bleaching Gas Co.

PIONEER MANUFACTURERS of LIQUID CHLORINE

MAIN OFFICE:
9 East 41st Street
New York

Financing Chemical Developments

By John Morris Weiss

A FEW weeks ago, in a talk at the Chemists' Club, Dr. Friedrich Bergius told of his own development work which has extended over long periods. Toward the end of his talk he said one thing that any of us who has taken part in major developments, realizes full well. As he expressed it, the most difficult thing in development is to keep the same financiers throughout. He added jocosely that as a rule they would only last five years.

The different stages of chemical development work entail different risks and should be financed by different types of capital is clearly indicated by Mr. Weiss, who was long in close contact with the development work of the Barrett Co., and who, during the past six years has widened his experience by consulting practice

In financing chemical projects, it must be recognized that there are different kinds of money. The savings of a wage earner against the rainy day is not the same as the surplus of the wealthy investor, when it comes to the selection of securities or investments. The latter can afford to take unusual risks in the hope of unusual return, while the former must consider above all, safety for his principal. Between the extremes of the widow's mite and the plutocrat's excess there are all degrees of gradation of the money of the investing public. Every financial house which stands sponsor for securities desires to procure the right kind of money for the enterprise.

I want to consider here the various phases of the development of an industrial chemical process and weave into the picture my idea of the kind of money that should be used. I am not considering a development financed within a producing company but developments which must be financed to some part of the investing public, either through the securities of a new company or through the issue of additional stock or other obligations of an already existing company.

In the general picture of process development which follows I hope to present one important phase of chemical engineering work. This work extends into many industries not usually considered chemical but which use applied chemistry in connection with their production. I do not, however, intend to expand here on the subject of chemistry in industry, but rather to consider broad principles of both mechanism and finance as it concerns process development, regardless of the especial species of industry.

All processes start in the laboratory, whether this be the chemical laboratory, the physical laboratory, or the machine shop. The process, or reaction, is carried out on a very small scale and as far as chemical processes are concerned, usually in laboratory glassware. As we all know from experience, laboratory processes do not always work on the large scale; and in saying this I am not yet talking about financial success, but merely the fact that some things done in the laboratory fail to give yields when the scale of operation is increased. In chemical reactions, at least, this is due to a variety of factors such as apparatus corrosion, heat effects, etc., which are not obvious when only small amounts are handled.

To be specific, take the heat factor, that is, either the amount of heat necessary to make the reaction go and which must be supplied, or the heat inevitably formed when the reaction takes place which must be dissipated. There is no difficulty in the laboratory where cooling or heating surface is large, relative to the amounts of material handled. In the plant, however, especially if temperature control is important, the addition or subtraction of heat in the proper way may be vital to good yields or even any yield at all of the product desired. Often the solution of such secondary problems is the basis of technical success.

Now, the chemist conceives his process and makes his reaction go and writes an equation to represent what happens. He uses cabalistic symbols which take the final form.

$$A+B=C+D$$

and show the materials which enter the reaction, the products which are formed, as well as the relative amounts of materials used and produced.

To express some of the physical factors of importance, the physical chemist determines, for example, the heat balance of the equation and adds a tail with

ANNOUNCEMENT

INTERNATIONAL COMBUSTION ENGINEERING CORPORATION

announces that its subsidiary

F. J. LEWIS MANUFACTURING COMPANY

will henceforth be known as

INTERNATIONAL COMBUSTION TAR & CHEMICAL CORPORATION

THE International Combustion Tar & Chemical Corporation will continue and extend the activities of the F. J. Lewis Manufacturing Company — producing a complete line of coal tar derivatives.

Improvements and extensions to manufacturing facilities will permit high quality production on an efficient manufacturing basis. Six plants, well located, and ample warehouse facilities will assure prompt deliveries and low freight rates.

The products of The International Combustion Tar & Chemical Corporation will be sold under the brand name "IN-CE-CO."

Products

Cresylic Acid
Naphthalene (Crude)
Naphthalene (Dyestuff)
"In-Nap" Moth Balls and Flakes
Solvent Naphtha
Pitch-all grades
Pitch Carbon Coke
Rubber Softeners

INTERNATIONAL COMBUSTION
IN-CE-CO
ENGINEERING CORPORATION

Products

Creosote Oil
Anthracene Oil
Flotation Oils
Lamp Black Oil
Shingle Stain Oil
Tar Acid Oils
Tar Paint
In-Tar Road and Paving Materials
Roofing Materials

Plants

Newark, N. J.
Fairmont, W. Va.
Chattanooga, Tenn.
Chicago, Ill.
Granite City, Ill.
Dover, Ohio

INTERNATIONAL COMBUSTION TAR & CHEMICAL CORPORATION

International Combustion Building, 200 Madison Avenue, New York, N. Y.

a positive or negative sign to indictate whether heat has to be disposed of or supplied. A reaction where heat is evolved, as when we burn coal under the boilers, is known as an exothermic reaction.

The chemical engineer takes the reaction of the chemist with its attached physical-chemical tails and adds a new factor to both sides of the equation. The cabalistic symbol for this factor is the familiar dollar sign. All costs entering the reaction—materials, labor, power and the intangibles—and all values resulting from the reaction are added to the chemist's equation. Unless the resulting balance is exothermic as to the dollars, it is only an interesting laboratory result, but of no industrial importance.

The steps by which the chemical engineer takes the new process and translates it into profitable industry, or as one noted chemical engineer has said "from the test tube to the dividend" should, in general, be along certain conservative lines.

Laboratory Ideas Hazardous

The money used for the initial small scale laboratory work must be an entirely individual matter, handled by the resources of the inventor himself or by a few of his friends and associates who know him personally, have confidence in him, and are willing to gamble. Even under the best of conditions a laboratory idea is a very hazardous chance. It is not a basis on which to interest any broad group of outsiders and certainly does not in any case justify an issue of even "insecurities".

Assume that the laboratory work on the idea is finished and let us consider what steps to take next. Here we will have to introduce our dollar factor in order to have some basis for consideration. We do know the cost of materials and can project a balance sheet on the assumption that comparable yields can be obtained on the large scale. Chemical engineering experience enables us to set down some figures as the probable labor and power costs. By making a rough estimate of the probable capital investment required, we can obtain figures for interest, amortization, obsolescence, and administration. Sales value of the product can also be estimated taking into account such factors as fields of usefulness, probable competition, and patent protection. The balance sheet as projected may show apparently ample margin for a commercial operation. Here is where the mistake is often made. There is a tendency to rush to large scale production, and when this is done, financial failure is almost always the inevitable result.

The proper step is to try out the process on the semi-works scale. This should be the smallest scale which can be conveniently handled in the materials of construction proposed for use in the finished plant. This semi-works step costs money and sometimes appears unnecessary; but I say without reservation that it is worth whatever it costs. It shows up unsuspected factors to be taken care of, which on the full scale would be difficult to correct without inordinate expense. It confirms the yields of the laboratory and furnishes the necessary data on corrosion, heat effects, and the like so that full scale equipment can be designed intelligently. At the same time it makes available moderate quantities of the product so that it can be tested out by prospective users. The essential standards of quality may be determined and enable the formation of a more rational estimate of the real sales possibilities.

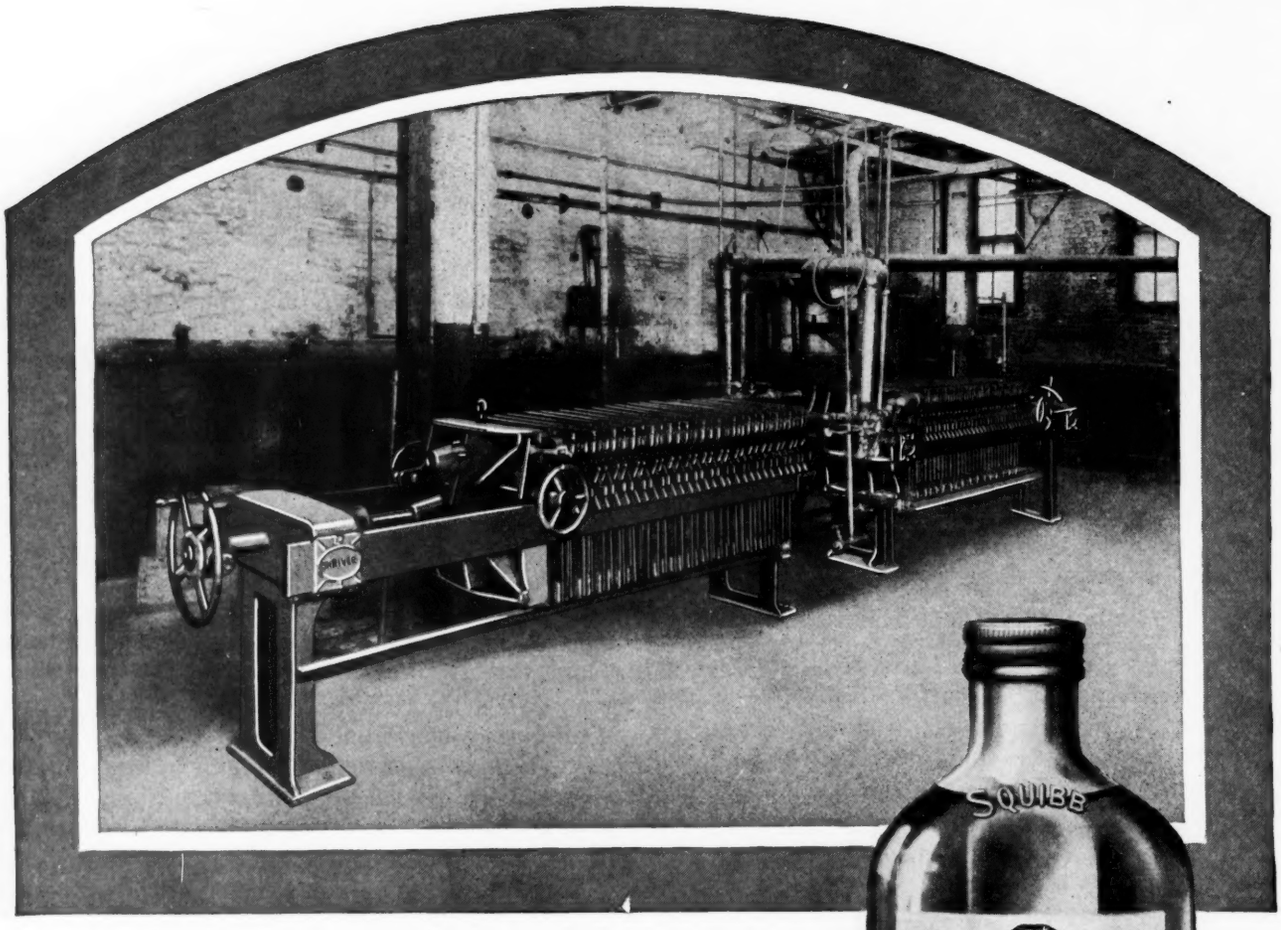
This semi-works operation will cost money and where should the money come from. A purely laboratory basis is almost never one on which a reputable financial house can offer securities to the general public. It is no place for the small investor. It is, however, something which can and should be handled by wealthy investors, sometimes an individual and more often a small group who can afford to lose what they put in and who will, with their eyes open, take certain chances with the hope of very unusual returns in the event of success. Every financial house is in touch with such groups and is justified in organizing syndicates to try out semi-works operations, when and if the chemical engineering dollar balance is sufficiently exothermic.

When the semi-works has been in operation for a period long enough to furnish such information, it is time again to "stop, look and listen". A second balance sheet must be prepared, this time on the basis of considerably more exact information than was available when the first one was made. The cost of plant can be estimated with reasonable accuracy and consequently such items as fixed charges and overheads become something more than mere guesses. The markets, probable sales price and selling costs can also be determined with a much greater degree of accuracy. This second balance sheet should, therefore, be a much better prophet of profits. If the exotherm of dollars is still sufficient, we are ready for the next step.

Erection of a Pilot Plant

We are, however, not yet ready for full scale operation, especially if the product is one of large tonnage possibilities. The final development step consists in the erection of a pilot plant. This is defined as a single unit of full commercial size so that further expansion means merely duplication without essential change. The pilot plant is a producing plant, lacking only such economies and refinements as are incident to mass production. It will, however, present all of the problems incident to full scale production and will give an accurate measure of labor, repairs and other costs. Moreover, it will afford the real test of the market and the selling price to be obtained, for when all is said and done, the only certain test of marketability lies in actual selling.

The financing of the pilot plant can be along broader lines than the previous steps. Here it becomes proper to finance to the public not as an investment but as a speculation. The chances for commercial



Shriver Filter Presses in the Cod-Liver Oil Refinery of E. R. Squibb & Sons, New York

SQUIBB
12 fl. ozs.
Squibb's Cod-Liver Oil
VITAMIN-TESTED AND VITAMIN-PROTECTED.
A carefully selected pure oil of the highest vitamin content and therapeutic efficiency, treated by a special Squibb process to protect and preserve the vitamins and improve the taste.
DOSE: Adults, 1 teaspoonful three times daily, preferably after meals; infants and children, ½ to 1 teaspoonful.
Keep in the ice-box, as a low temperature improves the palatability of the oil. After use, be sure to wipe the lip of the bottle free from oil and to replace the cap.
NOTE.—The process for conserving the vitamins in this oil imparts a slightly carbonic taste, which also adds to its palatability. If the bottle is allowed to stand open, the carbonic taste gradually disappears and the vitamin-protective action of the gas also is lost.
Vitamin A Content.—This oil was tested physiologically and found to have a content of fat soluble Vitamin A of not less than 50,000 United States Pharmacopoeia units in each 100 grams.
Vitamin D Content.—Physiological tests also have shown this oil to be exceedingly rich in the
vesting factor—Vitamin D.
E.R. SQUIBB & SONS, NEW YORK

SQUIBB'S COD-LIVER OIL
"BOTTLED SUNSHINE"
FILTERED WITH SHRIVER FILTER PRESSES

Another famous product filtered with Shriver Filter Presses is Squibb's Cod-Liver Oil, known to the mothers throughout the country as "Bottled Sunshine". In the exclusive processes by which E. R. Squibb & Sons, New York, produce "Bottled Sunshine", Shriver Filter Presses play an important part and contribute in no little way to the clarity and purity of this well known product.

Those who contemplate the purchase of filter presses, be it a single unit or a large scale installation, will find the unparalleled record for performance enjoyed by Shriver Filter Presses of special significance. Performance, in the final analysis, is what you really buy in a filter press. Base your choice on performance and you will always specify Shriver Filter Presses. We solicit your inquiries.

T. SHRIVER & COMPANY
ESTABLISHED 1860
856 HAMILTON STREET
HARRISON - N. J.

A FILTER PRESS FOR EVERY PURPOSE

SHRIVER

T. SHRIVER & CO. FILTER PRESSES HARRISON, N.J.

FILTER PRESSES FILTER CLOTH DIAPHRAGM PUMPS

success are good, but the purchaser of the securities is warned to put his money in only if he can afford to lose it. He knows that he is helping to finance a unit which in itself may not be an immediate money maker, but which, if successful, will be capable of material and profitable expansion. He is told that he is gambling to a certain extent but that the odds are with him. Such financing in most cases can be handled best by private rather than public subscription, since the amounts usually are not excessive and the class that can afford to take the risk can be reached.

After this pilot plant operation has proceeded for sufficient time to iron out all the wrinkles, we are ready to project the final balance sheet with certainty and to predict results in the mass production to come. The only uncertain factors left are those incident to all business, viz., future costs of raw materials, general trend of prices, and possible new developments, actual or impending, which may render the process in question obsolete. This last can be forecast to some extent by a knowledge of the scientific development of the world in the laboratory and semi-works stage as evidenced in the pages of our scientific and technical publications. Such forecasting interests everyone financially interested in industries.

After the pilot plant stage is completed with our third balance sheet before us, the expansion of the project further, assuming the pilot plant to have been operated on an adequate unit scale, is accompanied by only the ordinary business risks. The issue then to be floated cannot, of course, be placed in the class of high grade bonds and stocks, but may fairly be put in the class of speculative investments. That is, there is reasonable safety of principal, strong probability of adequate returns, and the good possibility of unusual return as the industry is expanded.

Three Plant Stages

Borrowing a few similes from the oil industry, the semi-works plant is wildcatting in territory with favorable indications but no proven production. The pilot plant is drilling in territory where oil is known to exist but with the amount and quality uncertain. The final plant, after the pilot plant stage, may be likened to an investment in property with some profitable producing wells and undrilled acreage of the same character yet to be exploited.

These general principles of development financing apply to every sort of industry in which chemical raw materials or chemical engineering are used. Every organization which issues or stands sponsor for securities must determine for itself the development status of every part of each enterprise it finances and regulate accordingly the kind of money it procures. Especially with a going concern there is undoubtedly a tendency to check only the going balance sheet and take on faith the future special profits to be realized from expansion and new ventures without sufficiently analyzing the stage of development of the particular propositions which are to be the basis of the expansion either in tonnage or breadth of field.

We are all familiar with a number of securities issued by very reputable houses where failure was the result and failure was due to inadequate recognition of the real status of the project financed. These involved chemical engineering processes in which the jump to large scale production was made without adequate semi-works experience and with no pilot plant experience at all, with final loss of everything invested. Such failures are a positive detriment to the chemical engineer and to chemical industry since every such failure shakes the confidence of the investor, and makes the support of future meritorious development more difficult to obtain. With the rapid rise of chemistry in industry, it is essential that these basic principles be better recognized. Then the right kind of money can be placed in every kind of industrial enterprise which merits financing and the ultimate speculator or investor, as the case may be, will get "a run for his money."

American Cyanamid Co. approves an expansion and improvement program at its different plants to cost more than $4,000,000 including buildings and equipment. Work will involve extensions at Niagara Falls plant to increase output by about 100,000 tons of cyanamid per year, making total output 355,000 tons a year; additions to Ammo-Phos Works, Warners, N. J., with additional equipment for an increase of about 48,000 tons per year; extensions in Plant at Linden, N. J.; and erection of plant at new phosphate property near Plant City, Fla.

Celotex Co. plans construction of additional unit to company's New Orleans plant to cost about $500,000 and also erection of new $1,000,000 power plant. Construction is expected to begin at once and to be completed within six months, when plant's capacity will be increased 1,500,000 square feet daily. Company is also reported to be contemplating erection of plant at Clewiston, Florida.

Southern Acid & Sulphur Co., Inc., St. Louis, acquires a tract of about 20 acres of land at Bossier City, La., and plans construction of new chemical manufacturing, storage and distributing plant at that location. Project is reported to cost over $250,000 including equipment.

Commercial Solvents Corp., New York, plans construction of new one-story addition to Peoria, Ill., plant, estimated to cost approximately $50,000 and designed primarily for storage and distributing service.

Merck & Co., Inc., Rahway, N. J., authorizes construction of new two-story addition to plant, estimated to cost in excess of $50,000. Other smaller buildings will be erected at the same time.

Paraffine Companies, Inc., plans expansion of San Francisco plant to include erection of new buildings and installation of new equipment at approximate cost of $600,000.

Limestone Fertilizer Co., Davenport, Ia., plans erection of new fertilizer plant near Burlington, Ia., at cost of over $400,000 including equipment.

Proctor & Gamble Co. plans erection of plant at Locust Point, near Richmond, to cost about $4,000,000.

Pacific Coast Borax Co. awards contract for construction of concrete warehouse at Wilmington, Cal., at cost of $100,000.

GRASSELLI
When you need
BARIUM
CHLORIDE
in a hurry, just call up our nearest branch and ask them "What price?" and "How soon can you ship?" The answers you will get to both questions will be just what you want. That is the significant value of our national organization of branches and warehouses all over the country. There's sure to be one near you, and we can give you Service Extraordinary.
THE GRASSELLI CHEMICAL CO.
Established 1839
CLEVELAND
New York Office and Export Office: 347 Madison Ave.
Branches and Warehouses:
Albany
Birmingham
Boston
Brooklyn
Charlotte
Chicago
Cincinnati
Detroit
Milwaukee
New Haven
New Orleans
Paterson
Philadelphia
Pittsburgh
San Francisco
St. Louis
St. Paul
ESTABLISHED 1839
CHEMICALS
ZINC
GRASSELLI
DRY COLORS
PIGMENTS
GRASSELLI GRADE
A Standard Held High for 90 Years

Price of Chilean Nitrate May Be Reduced to Spur Demand

It is understood that an important decision has been taken by the Chilean nitrate authorities, says the "Chemical Trade Journal." If at the end of the current nitrate year (June 30 next) conditions in the world nitrate market seem to show that the whole of the increased output of nitrate will not naturally be consumed by the increased demand, considerable reductions in the fixed world market prices will be made, and will come into force at once with the beginning of the next nitrate year. All stocks accumulated on June 30 will be sold at the reduced price, but to protect the holders of the stocks a fall clause will provide that any losses on the stocks will be made up to them.

Free entry of imports of metallic calcium, metallic lithium and metallic barium will be accorded by customs authorities hereafter under a ruling made by Acting Commissioner of Customs, J. D. Nevius. The ruling was predicted on the finding that these commodities are properly classifiable as "metals, unwrought, whether capable of being wrought or not," under Paragraph 1562 of the Tariff Act of 1922.

Lignite reserves of great potential value, amounting to more than 15,000,000,000 tons, have been surveyed by Government geologists in the areas comprising Western North Dakota, Northwestern South Dakota and Eastern Montana, according to a statement by the Department of the Interior. This amount compares with 18,000,000,000 tons of coal produced in the United States since the discovery of coal.

Germany Restricts Potash Mining

Convinced that there is no need for exploitation of new seams of potash, the German Government extends until December 31, 1931, the provisions of the law prohibiting shaft-sinking in potash mines. The law was to have expired on December 31, 1928.

Under the effects of this law, according to German press reports, intense rationalization has taken place in potash mining. Of the 229 works for which production quotas were set by the potash syndicate 121 works have been closed down permanently.

Dr. J. P. Longstaff, general secretary, Society of Chemical Industry, announces retirement on March 31, 1929. Henry T. F. Rhodes, honorary general secretary, British Association of Chemists, has been appointed assistant to Dr. Longstaff and will succeed him on that date.

Etablissements Kuhlmann is reported to be endeavoring to start manufacture of ammonium phosphate, which problem is said to have been solved economically by German fertilizer producers. This matter is of particular interest to the French because of their interests in Moroccan and Tunisian phosphates.

German potash syndicate's home and foreign sales during the first eleven months of 1928 are reported as aggragating 1,314,238 metric tons of pure potash, as compared with 1,138,930 tons in the same months of 1927.

Representative La Guardia of New York, introduces a resolution in the House, Jan. 3, to have the Congressional Record printed on corn stalk paper.

Goughs General Distributing Co., Ltd., England, acquires a concession for exploiting phosphate reserves in Transjordan, according to reports from Jerusalem.

Of the total of 13,118 tons of acetic acid and acetic anhydride imported by England in 1927, 7,260 tons came from Canada, and 4,025 tons from Germany.

I. G. Rumored Planning Formation of American Holding Company

Although press reports from Germany state that I. G. Farbenindustrie is about to form an American holding company for its interests abroad, the Berlin office of Farbenindustries reports that negotiations have reached too early a stage to justify any public announcement.

The Frankfurter Zeitung, organ of the I. G., says that the plan is still embryonic, but that it might take the form of placing the American interests of the Dye Trust with the International Co. for chemical enterprises, founded last summer at Basle, Switzerland.

The Company proposes to increase the capital stock of its Swiss holding company to 250,000,000 Swiss francs from 20,000,000. I. G. Farben shareholders will be offered 80,000,000 francs shares at rate of 500 Swiss franc shares for 6,000 marks of I. G. Farben shares at 150%. I. G. Farbenindustrie quarantees the dividend on the Swiss shares at the same rate as its own until 1938. Balance of 150,000,000 francs of the new Swiss shares will be held for future participations.

Company plans erection of centralized administration building at Frankfort on Main, Germany. Estimated cost is 15,000,000 marks and the structure will not be completed before the middle of 1930.

A new series of dryers is being manufactured by the I. G. Farbenindustrie under the trade name of "Soligen Trockenstoffe," in which the linoleic or resinic acid commonly used to render the active metal (generally cobalt, manganese, or lead) soluble is replaced by another organic acid capable of combining with a larger proportion of metal. The acid itself has also been shown to aid the drying process. These dryers are thus able to produce the required acceleration of the drying with a correspondingly smaller addition of the dryer than hitherto (¼—½% suffices in many cases). They contain no free acid, are free from resin, are readily and completely soluble in drying oils and the usual volatile solvents, and are stable.

Agreement between the I. G. Farbenindustrie, and the Austrian chemical producers provides for a division of European markets as follows: Austria, Hungary, Yugoslavia, Roumania, Bulgaria, and Turkey have been assigned to Austria; while the Czechoslovakian, Polish, and western European markets will be supplied by Germany. The agreement concerns alum, ammonia, sodium, thiosulfate, chrome alum, sulfur chloride, Glauber salts, sulfurous acid salts, sodium sulfide, and a number of other products. Fertilizers are expressly excepted.

Canadian Advisory Board on Tariff and Taxation announces public hearings at the board's headquarters, Ottawa, on January 23, 24, 25, 28 and 29, and February 1, for the consideration of applications for tariff changes affecting, among others the following products:

To continue ethylene glycol on the free list. (At present, item 788 admits this product free of duty until the end of the next session of the Canadian Parliament.) To admit free of duty "once refined" cottonseed oil.

Finance Co. of Great Britain and America, Ltd., acquires controlling interest in Humfrey-Sandberg, Ltd., which has been formed to develop the world rights of the Humfrey-Sandberg Freewheel and Easy Gear Change Device in the automobile and other industries.

Of the 49,988 cwts. of acetone imported into England in 1927, 37,915 cwts. came from the United States, 5,120 cwts. from the Serb-Croat-Slovene State, 3,734 cwts. from Austria, and 1,477 cwts. from Germany. In 1926, total imports amounted to 39,951 cwts., of which 24,642 cwts. came from this country.

Societa Italiana del Broma, of Rome, starts extraction of bromine from the concentrated liquors of one of the largest salt lakes in Italy. The initial daily production of 80-100 kilos is to be increased to 130-150 kilos.

Hy-Speed Mixers are BEST for EVERY Mixing Process

...because ALSOP manufactures a complete line of mixers with the proper power... speed... endurance... and capacity...for mixing *any* liquid in *any* tank.

Type No. 9
2 H. P Ball-Bearing Model

Hy-Speed Mixers

...now include a number of new mixers of unusual and advanced design... *"2-Speed Gear-Change"* Mixers, with instantaneous change from low starting to high operating speed... *"1,000-Speed"* Mixers, with unlimited control of R.P.M.... direct drive mixers for light liquids... and new, larger models of our standard types which give increased mixing efficiency in tanks up to 50,000 gallons capacity. U. S. Patents fully cover the features which insure the supremacy of *"Hy-Speed"* Electric Mixers.

Write for our complete catalogue today!

Alsop Engineering Co.

Electric Mixers, Filters, Pumps, Bottle-Fillers, Glass-Lined Storage and Mixing Tanks

47 WEST 63rd STREET **NEW YORK CITY**

Are Present Cylinder Test Regulations Practicable?*

By Glen D. Bagley
Union Carbide and Carbon Research Laboratories

CYLINDER testing is of vital importance, since cylinders represent a large capital investment and tests are the only means of determining the condition of the cylinders, both at the time they are purchased and after they have been in service. The fundamental properties desired in high pressure gas cylinders are:

1. A sufficient wall thickness to limit the stress at the maximum working pressure to a safe percentage of the ultimate strength of the steel
2. A proper value for the elastic limit which is determined by the heat treatment of the steel so that it may be high enough to provide against the steel being excessively stretched during the acceptance test of the cylinder and low enough to secure the maximum possible degree of ductility consistent with the necessary minimum value of the elastic limit.

A knowledge of the wall thickness is highly important, since cylinder walls are made as thin as possible consistent with the necessary strength to avoid excessive freight charges and a small decrease below the established minimum thickness may result in a very considerable increase in the wall stress. A knowledge of the ductility of a given steel as determined by the elastic limit is also of great importance, since cylinders through the unavoidable conditions of their use and shipment are subject to much abuse in handling and the ductility of the steel is a measure of the amount of this abuse which they can safely stand. The past records of the extremely large number of high pressure gas cylinders in use in the United States has shown such a small number of failures as to indicate that these desirable qualities must have been largely achieved. In spite of this fact, however, the consequence of a single cylinder failure may be so serious that it is pertinent to inquire whether anything more can be done still further to safeguard their production and use.

Practically all of the cylinders in use today in the United States have been made under the Interstate Commerce Commission regulations. The principal features of these tests are as follows:

Every cylinder must withstand a test pressure equal to 1 2/3 times the charging pressure at 70f° F, with a permanent expansion not greater than 10% of the total and without any previous pressure greater than one-third of the test pressure having been applied. In addition, one cylinder from each 200 must stand a crushing test to six times the wall thickness without cracking and also tensile test specimens from this cylinder or another cylinder must show an elongation of not less than 10% on an 8" specimen with an elastic limit of not more than 70% of the ultimate.

The hydraulic test shows only that the wall stress produced in a particular cylinder by the test pressure is not greater or only very slightly greater than the elastic limit of the steel. It does not give any information regarding the value of the stress, since a thin wall cylinder with a high elastic limit would pass the test equally well with a thicker cylinder which had a lower elastic limit. The crushing and tensile tests are in themselves satisfactory, since they give a determination of the desirable quality of ductility in the cylinder steel, but unfortunately they can only be made on one cylinder out of two hundred and that cylinder can never be used.

Investigations were started in 1924 with the object of developing additional tests which would give more information with regard to each cylinder made without harming the cylinder. The first work was to make a series of measurements from which curves could be plotted, showing the relation between the expansion of a cylinder and the pressure applied up to a considerable distance beyond the elastic limit. The Interstate Commerce Commission regulations do not allow a cylinder to be stretched so that it shows a permanent expansion of more than 10% of the total expansion at the test pressure, but for the sake of the information desired, these curves were extended considerably beyond this limit. Subsequently, the cylinders were burst under hydraulic pressure, tensile test specimens were cut from their walls, the hardness of the steel was determined and the microstructure was studied.

**Presented at the Annual Meeting of the Compressed Gas Manufacturers' Association, New York, January 21, 1929.*

SINCE 1858, THE WORLD'S LARGEST MAKERS OF QUALITY BAGS

"..it must be dry."

Calcium Chloride is a moisture absorbent, widely used as a dust preventive, road binder and concrete accelerator. It must be kept *absolutely dry* until the moment it is applied.

"Dowflake Calcium Chloride is shipped in both carload and less-than-carload lots to points in the United States and Canada... Any package we use must be decidedly waterproof to prevent liquifying in transit... The conditions to which we subject our packages are very severe, but we have found Bemis Waterproof Bags satisfactory in every respect."

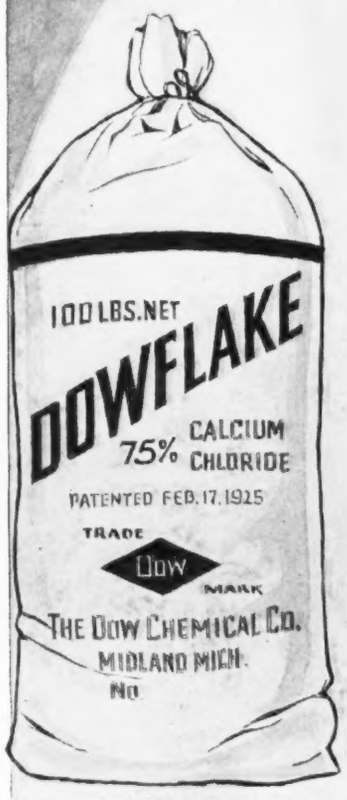
—Dow Chemical Co.

SEVERAL years ago the Dow Chemical Co. were seeking a satisfactory shipping container for Calcium Chloride; a container which would be easy to handle, economical and, above all, absolutely moisture proof. The Bemis Technical Staff, co-operating with engineers of the Dow Chemical Co. produced the bag shown at the left. It was a distinct success, lowering shipping costs and eliminating losses from damage.

Every year more shippers are adopting bags, especially designed to carry their products with the utmost safety, convenience and economy. They have found that bags offer substantial savings—savings in freight, storage space and handling costs that are really worth while.

If savings of this kind are of interest to you, the Bemis Technical Staff will be glad to make a study of your product. They will tell you quickly and without charge whether bags can be used to your advantage and profit.

BEMIS BRO. BAG CO. *Address:* Gen'l Sales Offices, ST. LOUIS, U.S.A.



Bag Factories
ST. LOUIS
MINNEAPOLIS
OMAHA
NEW ORLEANS
SAN FRANCISCO
INDIANAPOLIS
MEMPHIS
KANSAS CITY
SEATTLE
WINNIPEG
HOUSTON
BROOKLYN
BUFFALO
WICHITA
WARE SHOALS, S.C

Cotton Mills
ST. LOUIS
INDIANAPOLIS
BEMIS, TENN.
BEMISTON, ALA.

Bleachery
INDIANAPOLIS

Paper Mill
PEORIA

BEMIS BAGS

BEMIS BRO. BAG COMPANY

COTTON ~ BURLAP ~ PAPER ~ PRINTED OR PLAIN

When this work was completed, it was found that these expansion curves told a great deal about the condition of the cylinders.

Figure 1 shows a number of characteristic cylinder curves which are representative of various types of cylinders, while Figure 2 shows several experimental curves on individual cylinders. These curves are all practically straight lines up to the elastic limit or the point at which permanent expansion takes place, as indicated in the water jacket test. Beyond this point, they follow different shaped curves, depending upon the hardness of the steel. The softer cylinders show a relatively sharp break and rapid rise when the elastic limit is passed. The harder cylinders show a higher pressure for this point and a more gradual bending in the curve after it has been passed. The slope of the straight part of the curve indicates the average wall thickness of the cylinder. A thinner wall will show a greater elastic expansion at a given pressure than a heavier cylinder. This is really only another evidence of Hooke's law that the strain is proportional to the stress. In a thinner wall cylinder, the stress is naturally greater and the strain, as indicated by the elastic expansion, is therefore increased. Such curves, if they could be easily determined, would give a complete story regarding both the wall thickness and the condition of the steel in every cylinder made.

The determination of the complete curve, however, is a tedious operation which would be impracticable in commercial work. The determination of the complete curve, however, is not necessary. Since the wall thickness is indicated by the slope of the straight

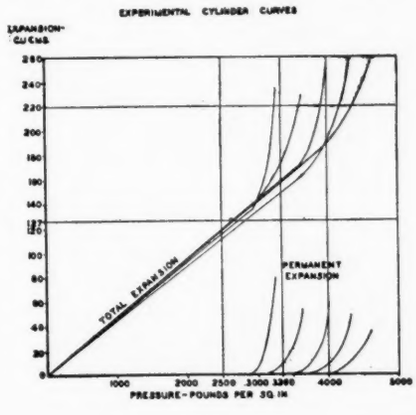


FIGURE 2

line part of the curve, a single determination at any point may be used to measure the thickness. For the 220 cubic feet oxygen cylinders, it was found convenient to make this determination at 2,500 lbs. per square inch. The expansion corresponding to the minimum desirable thickness at this pressure was found to be 127 c. c. The heavy line indicates the slope of the curve which would be obtained from a cylinder whose average thickness was just at this minimum. Every cylinder with a wall below this minimum, such as represented by curves D and F, would give a reading in excess of 127 c. c. at 2,500 lbs. per sq. inch pressure and would be rejected as being too thin, while any cylinder with an acceptable wall thickness would give a reading below 127 c. c. A study of the upper portions of the curves showed that cylinders such as those represented by curves A, B and C possess the desirable qualities of sufficient thickness combined with an elastic limit which

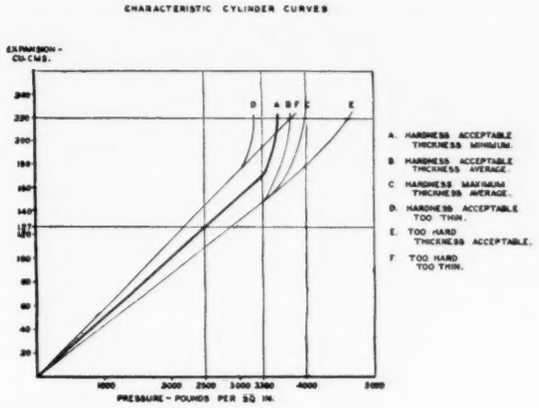


FIGURE 1

is sufficiently high to resist excessive stretch at the test pressure and at the same time retain the maximum possible ductility. A curve such as E which shows a very gradual bend indicates an unnecessarily high elastic limit which gives the steel greater tensile strength than is required at the sacrifice of a part of the desirable ductility. Curve D has a desirable elastic limit but insufficient thickness. If the thickness had been above the specified minimum, the bent portion of the curve would have fallen among the curves A, B and C. Curve F shows a cylinder which is too thin and has too high an elastic limit. This cylinder is the most undesirable type, since it possesses low ductility combined with high wall stress. This cylinder, as well as cylinder E which is also undesirable on the basis of low ductility, although not on the basis of high wall stress, would be acceptable under the present Interstate Commerce Commission test. Cylinder D would be rejected, as it properly should be, while cylinders A, B and C, the desirable ones, would be accepted.

By means of these curves, a complete specification for the hydraulic acceptance test on 220 cubic feet oxygen cylinders can be stated as follows:

At 2,500 lbs. per sq. inch, the elastic expansion must be not greater than 127 c. c. and the total expansion must reach a value of 220 c. c. between the pressures of 3,360 and 4,000 lbs. per sq. inch.

The tests can be made by setting the pressure at 2,500 lbs. per sq. inch, and reading the elastic expansion. The pressure can then gradually rise until the expansion reaches 220 c. c. or the pressure reaches 4,000 lbs. If the expansion at 2,500 lbs. does not exceed 127 c. c., the wall thickness of the cylinder is satisfactory, and if the total expansion reaches 220 between 3,360 and 4,000 lbs., it is then known that the steel in that cylinder is in a satisfactory condition.

A mark of value for buyers and plant executives

The mark of Swann Products is a dependable guide for buyers and plant executives. Complete confidence may be placed profitably in products which carry this identifying mark of value.

Divisions of THE SWANN CORPORATION *And Their Products*

Federal Phosphorus Co.
Birmingham, Ala.

Phosphoric Acid 75% H_3PO_4
Phosphoric Acid 50% H_3PO_4
Mono Sodium Phosphate
Tri Sodium Phosphate
Acid Sodium Phosphate, Pyro
Mono Ammonium Phosphate
Di Ammonium Phosphate
Di Calcium Phosphate
Tri Calcium Phosphate
Phosphoric Acid Paste

Diphenyl

Textile Oils and Chemicals

Federal Abrasives Co.
Birmingham, Ala.

Aluminous Oxide Abrasive Grain
Silicon Carbide Abrasive Grain

Southern Manganese Corp.
Birmingham, Ala.

Ferro Phosphorus 24% P.
Ferro Phosphorus 18% P.

Provident Chemical Works
St. Louis, Mo.

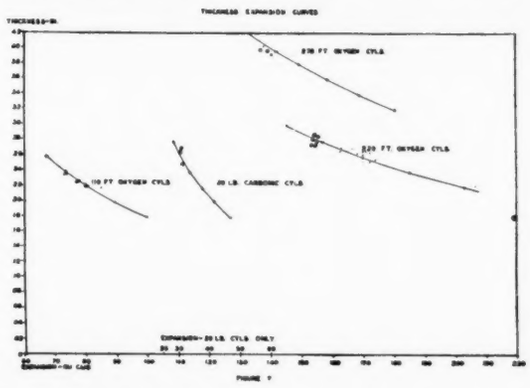
Mono Calcium Phosphate (H. T. Phosphate)
Phosphoric Acid
Acid Calcium Phosphate
Pyro Calcium Phosphate
Di Calcium Phosphate
Tri Calcium Phosphate
Pyro Sodium Phosphate
Tri Sodium Phosphate
Crystalline Phosphate, etc.
Calcium Sulphate
Bicarbonate of Soda
Sodium Aluminum Sulphate
Laundry Soap Builders

The SWANN CORPORATION
Birmingham, Alabama — Anniston, Alabama — St. Louis, Missouri.

In order to apply this simple test, however, it might be necessary permanently to stretch some of the cylinders to as much as 25% of their total expansion, as indicated in the water jacket test. This would be true in the case of a cylinder which reaches the value of 220 c. c. at the lower pressure limit of 3,360 lbs. per sq. inch, since the elastic expansion at this point, corresponding to our limit of 127 c. c. at 2,500 lbs., is 170 c. c. The permanent expansion is 50 c. c. which is 23% of the total. The Interstate Commerce Commission regulations set a maximum limit of 10% on the permanent expansion. It was therefore necessary to determine whether a permanent expansion of 25% would produce any harmful effects on the cylinder.

The 10% limit, as set by the Interstate Commerce Commission, means that each inch of steel in the circumference increases to 1.0002″ or 2/10,000 of an inch per inch or .02 of 1%. Since the Interstate Commerce Commission regulations require a minimum of 10% elongation on the tensile specimens, it is evident that a 10% permanent expansion in the acceptance test would only use up a maximum of $\frac{.02}{10}$ or 1/500 of the stretch available in the steel. If the limit were raised to 25%, the stretch would only be two and one-half times this much and would still be so very small that it could not possibly do any harm to the cylinder.

It is possible to make the determination of the elastic limit of the cylinder without exceeding a 10% permanent expansion, but it is more difficult, since no fixed value of total expansion can be specified and much greater attention is required on the part of the testing operator. The test is further complicated by the fact that a certain amount of so-called rounding out expansion occurs the first time pressure is applied to the cylinder. This permanent expansion is not caused by true stretch in the steel



and experience has shown that it is necessary to exceed 6% permanent expansion in order to be sure that the true elastic limit has been reached. In order to keep within the Interstate Commerce Commission regulations, the operator would have to determine when the permanent expansion had exceeded 6% without exceeding a total of 10%, a very difficult task. For commercial reasons, therefore, it would be desirable to increase the allowable permanent expansion limit to 25% in order to facilitate the operation of the test and there do not seem to be any valid objections to this increase.

The second phase of cylinder testing is concerned with the determination of what happens to a cylinder after it is placed in service. Extensive investigations have shown that the only factor of serious consequence to the life of an initially satisfactory cylinder is internal corrosion. Such internal corrosion presents no evidence of its existence on the outside of the cylinder and it is highly important that some means be available to determine the extent to which it has occurred.

The elastic expansion of the cylinder can be used for this purpose. No extra measurements are required since the present Interstate Commerce Commission regulations require the determination of the total and permanent expansion on each cylinder in service every five years. The difference of these two readings gives the elastic expansion directly. In new cylinders the elastic expansion limit can be determined rather easily, since wall thickness measurements can be made before the cylinders are necked and the expansion figures corresponding to an average wall thickness determined. On old cylinders, this is not possible without destroying the cylinder. The Bach formula for elastic expansion of cylinders gives an opportunity for relating the wall thickness to the expansion without destroying the cylinder. This formula, as modified by Dr. Stürcke, is

$$V_p - V_o = \frac{Q^2}{Q^2 - 1} . K''$$

This equation shows that once the value of the constant K″ is determined for a given test pressure, the value of Q can be determined directly from a single elastic expansion reading. Since Q is the ratio of the external to the internal diameter, and the external diameter is known or can be measured, the internal diameter can be directly calculated and from it the average wall thickness of the cylinder. Knowing the value of Q, the wall stress can be determined by the formula,

$$S = \frac{.4 + 1.3\ Q^2}{Q^2 - 1} . P,$$

in which S is the maximum fibre stress at any point in the cylinder wall. These formulas therefore give us a method of determining the wall thickness and from it the wall stress once the value of K″ has been determined for a given type of cylinder.

It is doubtful whether a single value of this constant can be determined which will be generally applicable to all sizes and types of cylinders. The determinations of the constant which have been made so far have been carried out by measuring the elastic expansion of a cylinder at 3,360 lbs. pressure and then cutting it into sections, measuring the thickness at ninety-six different points and determining the average. The curves in Fig. 7 show the results

METHANOL

95-97% PURE AND DENATURING

METHYL ACETONE

WOOD PRODUCTS CO.

BUFFALO — REFINERS OF METHANOL — NEW YORK

BLOCK TINNED

For

Aqua Ammonia

ABSOLUTELY PURE

That preserves and protects

Complies with I. C. C. 5

SPECIFICATIONS

55 gallons—16 gauge Shell
14 gauge Head and Bottom

110 gallons—14 gauge Shell
13 gauge Head and Bottom

1-Bar Rolling Hoops

JOHN TRAGESER STEAM COPPER WORKS

Grand Avenue — Maspeth, N. Y.

of some of this work. Six new 220 cu. ft. oxygen cylinders were tested in this way and the relation of their elastic expansions to their average wall thicknesses are shown by the six small circles on the 220 cu. ft. oxygen cylinder curve. An average value of the constant was determined from these six points and the curve was calculated from it by using the above formula. The dots surrounding this curve show the results of determinations made on a number of cylinders which were withdrawn from service. The other three curves for the 275 cu. ft. oxygen, the 110 cu. ft oxygen and the 20 lb. carbonic cylinders were calculated from this same constant determined from the original six 220 ft. oxygen cylinders, but modified in proportion to the different volumes of the other cylinders. Three cylinders of each of these types were then tested, cut up and measured and the results plotted on their respective curves. The agreement between the calculated curves and the measured points is quite satisfactory for this type of work and indicates that for these four types of cylinder, at least, a single constant can be used.

The Compressed Gas Manufacturers' Association has been carrying out a program of tests on the effect of non-uniformity of the wall thickness, variations in the internal volume and in the proportions of the cylinders, on the value of the constant. It seems quite certain that a single constant can be established, at least for any given class of cylinders and possibly for a number of classes which do not vary too widely from each other. When this work is completed, an elastic expansion limit can be set for each type of cylinder so that they can be withdrawn from service when they have reached this point, with the assurance that good cylinders are not being scrapped.

In some cases it has been found that excessive corrosion can occur in less than the prescribed five-year test period. An additional safeguard against this possibility has been worked out by applying a hammer test to each cylinder as it is received at the plant. This consists in tapping the cylinders with a light hammer. Any cylinder which does not ring clear has probably been subjected to a corrosive condition and should be given a jacket test immediately, regardless of whether it is due for the five-year test. If the elastic expansion is not above the limit, it can be cleaned out and returned to service.

In conclusion, it has been shown that simple non-destructive tests are available which make it possible to determine the wall thickness and condition of the steel on every new cylinder which is placed in service. In addition, the present five-year test affords data from which the wall thickness of cylinders in service can be determined during their life period so that they may be discarded before they become dangerous and the hammer tests give an additional safeguard which can be applied much more frequently than the regular five-year test.

Glycerine Freight Rates Reduced

Public Service Commission approves new freight rates of the New York Central (East) on glycerine (other than crude) in bulk in barrels, carload, minimum weight 40,000 pounds, from New York and Brooklyn stations, Long Island City (Pidgeon Street Terminal), New York (including lighterage), Kings Bridge, Morris Heights, High Bridge, Melrose Junction Westchester Avenue and Port Morris to Rensselaer, 22.5c per cwt. Reductions effective February 1.

Commission also approves new freight rates as follows: New York Central (East), potash (carbonate of), c. l., from New York and Brooklyn stations, Long Island City (Pidgeon street terminal), New York (including lighterage), Kingsbridge, Morris Heights, High Bridge, Melrose Junction, Westchester avenue and Port Morris to Schenectady, 19c per cwt. Reductions effective January 11 under authority of Rule 58 of Circular 68.

General American Tank Car Corp., Chicago, announces appointment of L. A. Belding to take control of company's new high-pressure tank-car department. He has been in charge of forge-welded products including tank-cars and containers, made by the American Welding Co., subsidiary of American Car & Foundry Co. His headquarters will be in New York.

Bureau of Prohibition, in a ruling made public January 5, directs that hereafter delivery of alcohol by means of tank wagons or tank trucks will not be permitted by the prohibition authorities. The order amended a section of the Bureau's regulations No. 3 so as to prohibit completely the transfer of alcohol in the manner mentioned.

A survey just completed by the Division of Cotton Marketing, Department of Agriculture, in connection with the study of new uses for cotton, indicates that 97.6 per cent. of the fertilizer of the United States is shipped in burlap or jute bags and only 2.4 per cent. in cotton bags.

Wm. J. Sweet Foundry Co., Irvington, N. J., is distributing a new chart of "Sweetaloy" castings for corrosion and heat resistance, offered as an index to users of alloy castings for acid and heat resistance.

Viscose Co. plans erection of another unit to its rayon plant at Parkersburg, W. Va. New unit will be practically a duplicate of the one now in operation and will increase plant production 10,000,000 pounds annually.

L. W. Gibbons, New York, chrome and chrome-nickel steel equipment, announces removal of his general offices to the Graybar Building. Telephone Lexington 5242.

Robert Rauh, Inc., Newark, manufacturer of ester gum, completes installation for an additional plant capacity of one million pounds.

Surface Combustion Co., Toledo, issues special bulletin on "Pot Hardening Type" of its "S. C. Rated Furnaces."

Hagan Corp., Pittsburgh, publishes new folder on the Hall System of boiler water conditioning.

Continental Can Co., New York, purchases business and assets of Manhattan Can Co., Brooklyn.

Flint Paint & Varnish Co., Toronto, plans construction of new warehouse at cost of $150,000.

American Mineral Products Co., Inc., is constructing a new feldspar grinding plant at Walpole, N. H.

Keystone Container Car Co. is organized in Philadelphia with authorized capital of $1,000,000.

"Soup to Nuts"

The whole menu in the *stainless* chrome or chrome-nickel alloys, can be supplied by:

CARPENTER STEEL CO.
WELDED ALLOY TUBE DIVISION
Welded Tubing

GLOBE STEEL TUBES CO.
CHROME ALLOY TUBE DIVISION
Seamless Tubing

INDUSTRIAL WELDED PRODUCTS CO.
Welded Fabricated Material

INERT METAL PRODUCTS CO.
Castings (ROUGH OR MACHINED)

TITUSVILLE FORGE CO.
CHROME ALLOY DIVISION
Forgings and Trepanned Pipe

Whose Sales Departments are the office of

L. W. GIBBONS

GRAYBAR BUILDING
420 LEXINGTON AVENUE
NEW YORK

CANADIAN REPRESENTATIVES
T. McAVITY & SONS, LTD.
ST. JOHN, NEW BRUNSWICK

BRANCHES AT MONTREAL, OTTAWA, TORONTO, WINNIPEG, VANCOUVER

I. G. Fights Commercial Espionage

An astonishing story of the alleged attempts of the French Government to learn secrets of processes of the I. G. Farbenindustrie was told at Ludwigshaven court by Fritz Hellmann, one of four defendants to a charge of commercial espionage, says the "Chemical Age". Hellmann as a worker at the laboratories at Oppau, and said that on two occasions he had been approached by French officials who tried to induce him to betray secrets of the I. G. Refusing at first, he later agreed to supply information required. The French were supplied, he stated, with reports as to experiments on glycerine, phosgene and acetylene. He also He also supplied a report of experiments on lignite. Another of the defendants, Schwarzwaelder, when asked by the Bench whether he did not realize that he would have gravely injured German industry by revealing to foreigners methods of manufacturing synthetic benzine, replied: "There is no longer any secret in that. It is simply an international race between the big chemical trusts "

In a paper on "Energy Problems and Chemical Industry" which he read to the general meeting of the Verein zur Wahrung der Interessen der Chemischen Industrie Deutschlands, Dr. J. Hess, Munich, gives the world production of electrolytic caustic soda in 1927 as 410,000 tons, of which 110,000 tons were made in Germany. The comparable figures given for chlorine were 370,000 tons (100,000 tons in Germany), hydrogen peroxide 3,000 tons (2,000 tons), calcium carbide 610,000 tons (170,000 tons), cyanamide in terms of nitrogen 188,000 tons (85,000 tons), phosphorus 33,000 tons (30,000 tons), metallic sodium 25,000 tons (10,000 tons) and oxygen 250 million cubic metres (65 million cubic metres).

British customs makes arrangements for importation into the United Kingdom of trade samples of dyestuffs without the requirement of a dyestuffs import license. Following are provisions of the arrangement:—

Bona fide trade samples of dyestuffs not exceeding six ounces in weight will be allowed to be imported without a dyestuffs import license.

Such samples must be imported by parcels post, their contents declared in the usual manner, and the package must be clearly marked "trade sample."

A new plant for the manufacture of synthetic ammonia is to be opened at Wyry, Upper Silesia, Poland, in February, 1929, by the Oswag explosives company. In the new installation hydrogen will be obtained by the electrolytic process, and nitrogen by the Linde method. The synthetic ammonia will be used in the manufacture of sulfate of ammonia, reports Commercial Attache Clayton Lane, Warsaw.

It is reported that large deposits of nitrates have been discovered near Mariental, Southwest Africa, and that analysis shows the quality to be superior to that of Chilean deposits. The discoveries are said to have obtained a mining lease over a large area, although further prospecting has been prohibited.

South African Phosphates Exploration Syndicate, Ltd., is working phosphate deposits near Bandolier Kop, South Africa, and expects to have 100,000 tons of ore available early this year, according to reports from England.

Considerable Russian glycerine has been coming into the British market. According to official statistics, the amount of crude glycerine imported into that country from Russia in 1927 was 7,250 cwts., out of a total import of 19,921 cwts.

Sensible Heat Distillation, Ltd., London, is said to have made arrangements for the production of methyl alcohol by the Patart process.

Chemical Facts and Figures

"Farm Relief" Dominates Chemical Tariff Hearings

Chemical Industry Well Represented At Three-day Session Before Ways and Means Committee—Milk Pail and Corn Crib Replace Dinner Pail and Pork Barrel as Dominant Factors in Discussion of Proposed Revisions in Chemicals and Oils Schedule.

Many representatives of the chemical industry gather in Washington, January 7, 8, and 9, where, with "farm relief" playing the leading role and the "tariff no longer a political issue" forming an unusual, if somewhat unsteady setting, the Ways and Means Committee of the House holds its hearings on the proposed revision of the chemicals and oils schedule of the tariff. Among those present were:

Salmon W. Wilder, chairman of the board, Merrimac Chemical Co., and chairman, executive committee, Manufacturing Chemists' Association, who presented a brief on behalf of the association which mentioned no particular items but discussed the industry as a whole in its relation with the chemical industries of other countries. Dr. F. J. Zinsser, Zinsser & Co., who requested increases in tariff on tannic acid, gallic acid, and pyrogallic acid. W. S. Weeks, Calco Chemical Co., who asked for a duty of 1c per pound on nitric acid of more than fifty per cent. strength.

Dr. F. W. Russe, Mallinckrodt Chemical Works, discussed ether, caffeine compounds, barium sulfate and sodium sulfite, asking a duty of 6c per pound on the first, $1.50 per pound on the second, 5c per pound on the U. S. P. grade of barium sulfate, and 1c per pound on sodium sulfite. George W. Merck, Merck & Co.; A. W. Teeter, Charles Pfizer & Co.; and representatives of American citrus producers advocated a duty of 18c per pound on citric acid. Henry P. Bristol, Bristol-Myers Co., protested any increase in duty on tartaric acid although suggesting that the 5 per cent. duty on argols be eliminated. H. M. Hubbard, Royal Baking Powder Co., also suggested the latter, but in addition, asked for an increase to 9c per pound on tartaric acid duty and to 7½c lb. on cream of tartar.

August Kochs, Victor Chemical Works, asked that present duty of 6c lb. on oxalic acid be maintained and that duty on formic acid be increased to like amount. D. B. Galatwaller, Vanadium Co., asked that duty on vanadium chemicals be doubled. Monte Burt, National Wood Chemicals' Association asked for continuance of present duties on acetate of lime and methanol. Frank A. Lidbury, Oldbury Electric-Chemical Co. discussed phosphorus derivatives advocating higher duties. F. F. Jordan, Emery Industries asked that duties on stearic and oleoic acids be increased to 50 per cent ad valorem.

A. Cressy Morrison, Carbide & Carbon Chemical Corp., asked protection for the entire group of non-coal tar synthetics. C. O. North, Rubber Service Laboratories, showed needs of the rubber chemicals; Commercial Solvents Corp. asked increase to 7c lb. in duty on butyl acetate; E. M. Allen, Mathieson Alkali Works, asked for no change in alkali schedule but asked that chlorine be made dutiable at ¾c lb. James J. Riley, Barium Reduction Co. asked duty of ¾c lb. on natural barium carbonate; Salmon W. Wilder, that aluminum sulfate be dutiable at ⅜c and ¾c lb.; and March G. Bennett, American Lampblack Manufacturers' Assn., that lampblack be dutiable at 50 per cent. or 4c lb.

Coal-tar products received considerable attention during the second day's hearings. Dr. E. H. Killheffer, Newport Chemical Works, on behalf of Synthetic Organic Manufacturers' Assn., and coal tar section, Manufacturing Chemists' Assn., asked a restoration of original rates as first established by tariff act of 1922 on coal tar products at 55 per cent. and 60 per cent. L. V. Redman, Bakelite Corp., suggested some changes in coal tar paragraphs, and Eugene R. Pickrell, General Dyestuffs Corp., asked that American selling price be abandoned as basis for assessing duties of dyestuffs. J. W. Boyer, Monsanto Chemical Works, presented briefs asking changes and higher duties in the obromine, glycerophophoric acid, chloral hydrate, and vanillin. Duty on casein also came in for considerable discussion with dairy interests asking increase to 8c lb., and consumers asking that it be placed on free list.

Vegetable oils on Wednesday furnished an outstanding battleground. Domestic producers and agricultural interests had combined forces in a unanimous demand for a flat duty of 45 per cent ad valorem on all animal, vegetable, and marine oils and on the oil content of all oil-bearing materials. Soap manufacturers, were the chief opponents of this move which means greatly increased duties in almost all cases.

American Cyanamid Broadens Scope Through Calco Purchase

American Cyanamid Co., New York, completes arrangements to purchase the Calco Chemical Co., Bound Brook, N. J. It is uncertain yet as to the details of operation, but it is probable that a subsidiary company will be formed to take over Calco's present business, and also to take over some of American Cyanamid's present activities which would fit more efficiently into the operations carried on by the Calco Chemical Co.

The sale involves transfer to the Calco Chemical Co. of 88,370 shares of Class B common stock of American Cyanamid. Calco stockholders will receive two and one half shares of American Cyanamid for one share of Calco preferred stock and one share of American Cyanamid for each nine shares of Calco common. Under the reorganization agreement, Amalgamated Phosphate Co. has agreed to purchase from the stockholders in the Calco company, who exchange their shares for American Cyanamid stock, 32,815 of the Class B common stock at $46 per share. The Calco Chemical Co. was started by R. C. Jeffcott about thirteen years ago and now employs several hundred people.

Consolidated Feldspar Corp. is organized in Delaware with reported assets of over $8,000,000 to merge several feldspar interests. Company has already acquired assets of Golding Sons Co., Trenton; Erwin Feldspar Co., North Carolina; Dominion Feldspar Corp., Canada; Maine Feldspar Co., Brunswick; Isco-Bautz Co., Murphysboro, Ill.; Feldspar Quarries Co., Ltd., Canada; Norman G. Smith Co., North Carolina. Capitalization consists of 50,000 shares of 7 per cent. cumulative preferred stock, no par, and 300,000 shares of common, no par. A. J. Fink, Baltimore is chairman of the board, and Herbert P. Margerum, formerly president, Golding Sons Co., is president.

E. I. du Pont de Nemours & Co. completes arrangements to acquire entire ownership of properties and business of du Pont Rayon Co. and du Pont Cellophane Co. While the du Pont company has heretofore owned a majority of the stock of these companies, there has been a substantial outstanding minority interest owned by French textile interests. It is planned that du Pont company shall carry on the businesses of du Pont Rayon and du Pont Cellophane through wholly owned subsidiary companies.

Methyl Cellosolve*

IN CONTINUATION of its program involving the production of synthetic aliphatic organic chemicals, the Carbide and Carbon Chemicals Corporation is pleased to announce the commercial availability of Methyl Cellosolve* (Ethylene glycol mono methyl ether).

This new product is similar in general properties to its related compounds, Cellosolve* and Butyl Cellosolve,* but offers an additional advantage in that it is an excellent solvent for cellulose acetate as well as for nitrocellulose. It is therefore of particular interest to the lacquer and rayon industries where there has been a scarcity of satisfactory high boiling solvents for cellulose acetate. It has the most rapid rate of evaporation and the lowest boiling point (124.5°C.) of the available glycol ethers. These two properties are especially advantageous in many cases.

Methyl Cellosolve is a colorless and practically odorless liquid. Its dilution ratios for the hydrocarbons are exceptionally high, in cellulose acetate as well as in nitrocellulose solutions. As in the case of Cellosolve and Butyl Cellosolve, the absence of an ester group eliminates the possibility of hydrolysis.

Our technical department will be glad to supply additional data to those who are interested in investigating the new possibilities offered by Methyl Cellosolve.

CARBIDE AND CARBON CHEMICALS CORPORATION

Carbide and Carbon Building

30 East 42nd Street, New York City

UCC

Unit of Union Carbide and Carbon Corporation

**Trade-mark Registered*

Personal and Personnel

Among the new members of the Chemists' Club, New York, are: George A. Bode, assistant to sales manager, Roessler & Hasslacher Chemical Co.; Charles A. Boschen, manager resale department and export manager, Grasselli Chemical Co.; Harlan A. Depew, chief, Rubber Research Division, N. J. Zinc Co.; Frederick Edel, assistant to sales manager, Roessler & Hasslacher Chemical Co.; Arthur W. Huguley, president, Seaboard Chemical Co.; Eric Krell, treasurer, and Carl B. Peters, president, Synthetic Nitrogen Products Co.; and Arthur Scott Shoffstall, general manager, International Nickel Co.

Mr. and Mrs. Francis P. Garvan are to receive the award of the American Institute of Chemists of its medal "for noteworthy and outstanding service to the science of chemistry and the profession of chemist in America", according to an announcement of the institute. Official award will be made May 4, at which time Hon. John W. Davis, Dr. John Abel, and Dr. John H. Findley will speak. Dr. Charles H. Herty will preside and Dr. Findley will make the presentation. Mr. and Mrs. Garvan will respond.

W. C. Durant announces retirement from automobile world to devote himself to a "rayon plant in Virginia in which he has acquired a 75 per cent. interest. His rayon affiliation is with the Industrial Rayon Corp., in which he became a director in January, 1928. It is doubted, however, that he has a 75 per cent. interest in this company.

William H. Nichols, chairman of the board, Allied Chemical & Dye Corp. and graduate and trustee, Brooklyn Polytechnic Institute, is the subject of a painting, by George Boynton, recently presented to the school by graduates.

P. A. Grasselli II, son of Thomas S, Grasselli, president, Grasselli Chemical Co., is elected to board of directors and fourth vice-president of the company. His is the fourth generation of the family to hold a place on the board.

Dr. C. L. Reese, formerly director of research of du Pont's and Dr. E. E. Free are members of a joint committee of the National Research Council and Explorers' Club to work out plans for co-operation between explorers and scientists.

Dr. Frank C. Whitmore, for past four years, head of the department of chemistry, Northwestern University, is appointed dean of the School of Chemistry and Physics, Pennsylvania State College.

Edgar M. Queeny, president, Monsanto Chemical Works, is elected a director, Mississippi Valley Assn., and also of the Manufacturers' & Merchants' Assn., St. Louis.

F. B. Davis, Jr., president, Du Pont Viscoloid Co., is elected president and chairman of the board, United States Rubber Co., thus signalizing assumption of control by the du Pont interests.

Harold H. Will is elected president, Will & Baumer Candle Co., Inc., succeeding Theodore C. Eckermann, who becomes chairman of the board of directors.

Joseph M. Wafer, Industrial Chemical Manufacturing Co., is now associated with the sales division, Rossville Commercial Alcohol Corp.

Hiram S. Rivitz, president, Industrial Rayon Corp., is elected to board of directors, National City Bank, Cleveland.

Ray P. Dunning, formerly sales manager, the Barrett Co., is appointed U. S. Commissioner at Springfield, Mass.

Sodium Phosphate Production Costs Discussed Before Tariff Commission

Costs of production of sodium phosphate are discussed before the United States Tariff Commission at hearings, January 15 and 16. Those who testified were John A. Chew, vice-president and sales manager, Warner Chemical Co.; C. R. DeLong, commercial research manager, Federal Phosphorus Co.; J. F. Wischhusen, import manager, Harshaw, Fuller & Goodwin Co.; Alexander Paterson, secretary, Piece Dyers and Finishers Protective Assn.; and E. Hennion-Courtois, administrateur-directeur, Societe des Produits Chimiques de Haren, Belgium. At conclusion of testimony, February 11 was set for filing briefs.

Tariff commission has under consideration an application of domestic producers for an increased duty under the flexible provisions of the tariff act. The present duty on soda phosphate is one-half cent per pound. In preliminary statement of information. it was disclosed that maximum duty permitted under the law, an increase to three-quarters of a cent, would not equalize domestic and foreign production costs.

Investigation of soda phosphate costs was started in May, 1927, on petition of the Warner Chemical Co., New York, and the statement of information was issued November 6, 1928. The tariff act makes no distinction among monobasic, dibasic and tribasic phosphate, but during the proceedings the three salts were considered separately. There are no imports of monobasic phosphate, and this product played but little part in the discussion.

Eugene M. Taylor

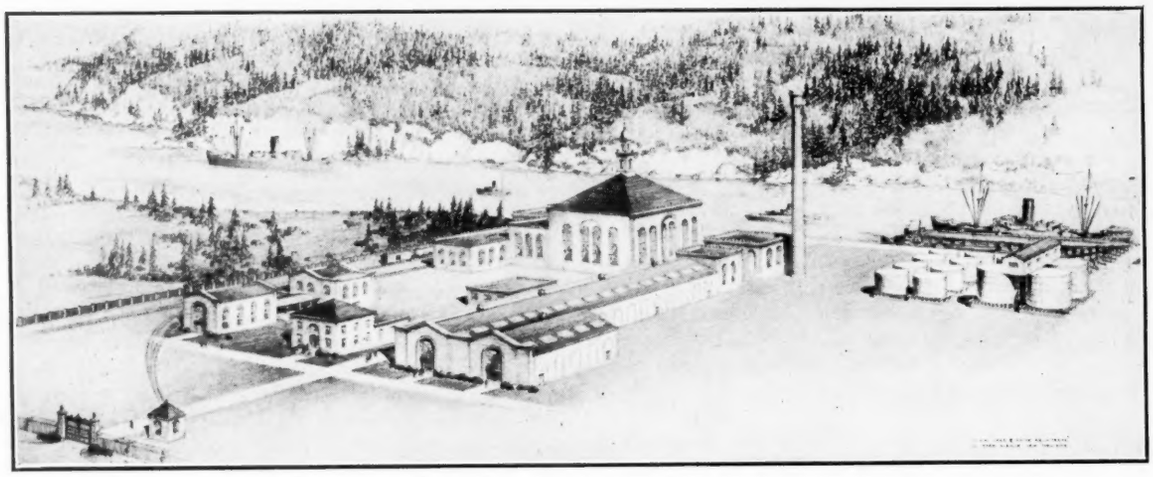
Eugene M. Taylor, who retired in 1927 after spending his entire business life in the alkali industry, dies in Miami, Fla., December 28, aged 63. He was born January 14, 1865 in Brooklyn and in 1880 entered the employ of Edward Hill. Eventually he became a partner in the firm, then known as Edward Hill's Sons Co., New York. The organization was for many years selling agent for the Michigan Alkali Co., and when the latter took over its selling, January 1, 1924, he became director of sales, in which capacity he continued until his retirement, May 1, 1927.

"In the passing of Gene Taylor", writes Eli W. Winkler, president, Isaac Winkler & Bro. Co., "the chemical industry suffers a loss of one of its most popular and picturesque characters. A genial companion, a loyal friend, a princely soul—truly he was a rare combination of the finest attributes of man. The memory of his many splendid qualities and tender acts will always be cherished by his legion of friends, among whom it was my privilege to be classed as one of the closest."

After reviewing Mr. Taylor's life in the industry, John B. Ford, vice-president. Michigan Alkali Co., writes that "from his long personal and intimate connection with the alkali industry, his loss will be deeply felt."

Franklin H. Kalbfleisch, son of the late Martin Kalbfleisch, dies at his home in Babylon, L. I., January 30, 1929, in his eighty-fourth year. He was born in Brooklyn, March 3, 1846, and spent his entire lifetime in the chemical business. With his two brothers, he succeeded to the business of Martin Kalbfleisch & Sons, established by their father in 1829. During his lifetime, he organized many companies in various branches of chemical manufacture and he later consolidated all the interests into the Kalbfleisch Corp., of which he was active head until 1920 when ill health forced his retirement from active participation in the business.

William T. Cashman, general counsel, Grasselli Chemical Co., dies at his home in Cleveland, December 26, aged 56. He was born in East Montpelier, Vt., October 4, 1872 and had been general counsel for the Grasselli organization since 1905. In 1912, he was also elected a member of the board of directors and assistant-secretary of the company.



HOOKER ELECTROCHEMICAL COMPANY

Announces

NEW TACOMA PLANT

Now in Operation

Producing

LIQUID CHLORINE

Tank Cars
Cylinders

CAUSTIC SODA

Solid
Liquid
Flake

This new plant supplements our long established operation at Niagara Falls where for nearly twenty-five years we have been producing a long line of industrial chemicals of the highest quality.

With plants thus conveniently located we are prepared to make prompt delivery of HOOKER CHEMICALS to all sections of the country.

The advice and assistance of our technical staff are at your service.

EASTERN
SALES OFFICE:
25 PINE ST., NEW YORK CITY
PLANT, NIAGARA FALLS, N. Y.

WESTERN
SALES OFFICE:
TACOMA, WASH.
PLANT, TACOMA, WASH.

News of the Companies

E. I. du Pont de Nemours & Co., Inc., announces following changes in sales organization of paint and varnish division. J. C. Halloway, formerly supervisor, Virginia-North Carolina district, is appointed assistant to the division sales manager. He is succeeded by R. J. Lewis. H. R. Latowsky is appointed supervisor of the states of Michigan and Indiana. William V. Gamber is appointed Western manager, prescription paint service division, with headquarters at Chicago, succeeding O. S. Bowman, who becomes special representative, prescription paint service. William Drew is appointed Western manager, architectural division, succeeding E. B. Wagner, who becomes special representative of the division. Clarence Marsh, C. H. Donnell, and J. S. Sommerville are appointed as special sales representatives in the Chicago district.

Welch, Holme & Clark Co., New York, is acquired by Elias D. Stults, J. Hewitt Vermilyea, Edward J. Welcke and M. Ernest Clark, through their acquisition of the interests of the Howard W. Sherrill estate in the company. They are now in active charge of the company which was formed in 1838. The company was incorporated in 1892 with the late A. M. Sherrill as president, and in 1926, the late Howard W. Sherrill became president.

Wishnick-Tumpeer, Inc., New York, is appointed sales agents for the Georgia Pine Turpentine Co., makers of "Piney Woods Brand" pine tar and pine tar oil. The latter company has discontinued its New York office and all sales matters will be handled through Wishnick-Tumpeer.

American Molasses Co., New York, purchases plant of General Industrial Alcohol Co., at Marrero, near New Orleans at reported price of more than a million. Operation of plant will be under direction of Walter Trautman and Joseph Schwarz.

Gillican-Chipley Co., New Orleans, naval stores, organizes Gillican-Chipley Sales Co., Inc., to handle distribution for parent company. New Company will also take over accounts of Naval Stores Export Corp.

Combustion Engineering Corp. is sending upon request, reprints of paper "Lignite, As a Commercial Fuel," by Edward P. Price. It describes results of use of pulverized lignite as fuel in important power plants.

Pennsylvania Sugar Co., Alcohol Division, appoints as sales representatives for St. Louis territory, the General Industrial Supplies Co., Syndicate Trust Building, St. Louis, Mo.

Wood Chemical Products Co., Jacksonville, Fla., extends its group insurance program to include employees in its Pensacola, Fla., Mobile, Ala., and Elberta, Ala., plants.

J. H. R. Products Co. establishes Jeavons Graduate Fellowship at Western Reserve University for pure science research in inorganic chemistry.

Niagara Alkali Co. publishes a leather-bound handbook as a complete reference book for users of caustic soda and caustic potash. Copies may be obtained upon request to the company.

Stillman & Van Siclen Chemical Laboratory Co., New York, changes name to Stillman & Van Siclen, Inc.

Dow Chemical Co., Midland, Mich., publishes a technical and commercial reference catalogue entitled "Dow Chemicals."

National Aniline & Chemical Co., New York, announces new developed dye, National Diazine Blue 4RL Conc.

Court Holds Mathieson Justified in Revoking Arnold, Hoffman Agency

Decision handed down by United States Circuit Court of Appeals in Boston on January 22, terminates litigation of ten years' standing between Mathieson Alkali Works and Arnold, Hoffman & Co., its former selling agents.

On December 31, 1918, agreement expired under which Arnold, Hoffman & Co. had acted as selling agents for five years. Some months previously a new agreement had been made, intended to become effective January 1, 1919. Between September 11, 1918, when Mr. Arnold retired as president of the Mathieson company, and time when new agreement was to become effective, the new management of Mathieson claimed to have learned of various transactions between Arnold, Hoffman & Co. and the Mathieson company, in which Mr. Arnold had represented the latter, to which they objected and, as a result, the Mathieson company repudiated the new agency agreement and began selling its products direct.

Various suits were brought pro and con, the most important of which was an action by Arnold, Hoffman & Co. to recover $900,000 damages alleged to have been suffered by reason of the refusal of the Mathieson company to perform the new agency agreement. United States District Court for the District of Rhode Island held that, although certain transactions had been properly criticized by the Mathieson company, they did not justify the repudiation of the agency agreement.

The Circuit Court of Appeals reverses the District Court and holds that not only was the Mathieson company justified in repudiating the new agency agreement, but that Arnold, Hoffman & Co. must account to the Mathieson company for all profits resulting from certain of the transactions criticized and repay all commissions collected from the Mathieson company in connection therewith.

Salesmen's Association Plans For Chemical Industries Dinner

Salesmen's Association sets May 9 as date for Chemical Industries dinner held in conjunction with the exposition, and announces following members of banquet committee: chairman, Dr. F. P. Summers, Noil Chemical & Color Works; speakers, E. A. Orem, E. I. du Pont de Nemours & Co.; invitations, Williams Haynes, CHEMICAL MARKETS; publicity, Grant A. Dorland, McNair-Dorland Co.; music and menu, Victor E. Williams, Monsanto Chemical Works; tickets and seating, F. A. Koch, Dow Chemical Co.; ex-officio, Charles F. Roth, Chemical Industries Exposition.

A questionnaire published by the association is being distributed to purchasing agents and executives of about 150 representative corporations of the American chemical industry.

It is designed to bring out an expression from them which would enable the Salesmen's Association to proceed intelligently with the development of this association in its relation with the chemical industry. Its aim is to bring about more efficient service to both the employers of salesmen and to the salesmen themselves.

A CORRECTION

In "The Chemical Chronology—1928" published in these pages last month, the following statement was made, "Federal Phosphorus Co. sells its electro-thermal acid process rights in Europe to Soc. des Phosphates, Tuniesens, Paris." This statement is incorrect insofar as it gives the impression that the company has sold its entire rights for Europe. In the negotiation referred to, the Federal Phosphorus Co. disposed of its rights only for the countries of France and Italy. The French company, therefore, owns the rights to those two countries only, while the Federal Phosphorus Co. still retains those for the remainder of Europe.

PRICELESS *to any* INDUSTRY

A GOOD reputation for dependable quality is always valuable to any business—to the Diamond Alkali Company it is a priceless asset—a reputation built up by years of unceasing vigilance in the manufacture of the highest quality Alkalies it is possible to produce.

Regardless of how you use Alkalies in your manufacturing processes, you can always specify Diamond Brand with the utmost confidence that its quality and uniformity will be constantly maintained.

Diamond Alkali Company

PITTSBURGH, PENNA.

Alcohol Institute Elects Officers

Industrial Alcohol Institute elects officers as follows: president, Victor M. O'Shaughnessy, president, Rossville Commercial Alcohol Corp.; first vice-president, R. H. Grimm, president, American Commercial Alcohol Corp.; second vice-president, S. S. Neumann, Publicker Commercial Alcohol Co.; treasurer, A. K. Hamilton, Pennsylvania Sugar Refining Co., Alcohol Division; recording secretary, John J. Carroll, Kentucky Alcohol Corp. Lewis H. Marks was reappointed executive secretary.

Federal Trade Commission January 2 announces that an order had been issued against James S. Kirk & Co., Chicago, requiring the company to cease and desist using the word "Castile" and the phrase "olive oil soap" to describe soap, the oil or fatty composition of which is not wholly derived from olives.

Provision is made in the order for qualifying descriptions of soap now sold as "Castile soap" but containing oils or fats in addition to olive oil.

William L. Evans, chairman, department of chemistry, Ohio State University, is awarded the Nichols Medal for 1929 by the American Chemical Society for his contributions to the chemistry of carbohydrates. Medal will be presented to Professor Evans at meeting March 1, at the Chemists' Club, New York, at which time he will read a paper on "The Mechanism of Carbohydrate Oxidation."

Dr. G. N. Hoffer, agronomist, leaves Bureau of Plant Industry, U. S. Department of Agriculture, and the Purdue University Agricultural Experiment Station, to join staff of N. V. Potash Export My. He takes charge of the company's interests at Chicago, with supervision over a territory embracing fourteen midwestern states.

Eugene C. Sullivan is presented with Perkin medal for 1929 at a meeting, January 4, of the Society of Chemical Industry, American Chemical Society, Societe de Chimie Industrielle, and American Electrochemical Society, in the Chemists' Club, New York.

Harry T. Freer, formerly vice-president, Gilbert Spruance Co., Philadelphia, is appointed manager, architectural department, paint and varnish division, E. I. du Pont de Nemours & Co., with headquarters at Philadelphia.

Drug & Chemical Section, New York Board of Trade, will hold annual banquet, March 14, at the Hotel Waldorf-Astoria, New York.

The first shipment of synthetic Arcadian nitrate of soda ready to leave the Hopewell, Va., plant of the Atmospheric Nitrogen Corp. This material is made for the Barrett Co., and is the first to be produced in the United States.

French Defendants in Potash Suit Denied Sovereign Immunity

French defendants in the anti-trust suit brought by the United States against the European potash monopoly have not the right of sovereign immunity as a result of the fact that the French government owns the majority of the capital stock of the French Society, Judge William Bondy rules in Federal Court.

These defendants and the French ambassador raised the question of immunity in seeking to have service of subpoenas set aside. The decision is considered important by the Department of Justice because of its bearing on international law and its interpretation of the Wilson and Clayton Acts.

Suit in the so-called "potash trust" was instituted in 1927. Defendants, insofar as the suit involves French potash, are the Societe Commerciale des Potasses d'Alsace, Jean Le Cornec, Pierre Gide, Rene Gide, and Walter B. Howe. The French Ambassador, not a defendant, was a petitioner in the motion denied by Judge Bondy.

Although this decision is important, it does not mean that the case will come to trial for both French and German interests have moved for dismissal on ground that plan of importing and selling potash in this country has been changed materially from that in use at time that suit was formulated. They contend that new plan does not violate the law. Representation of the Franco-German potash syndicate, previously held by direct agents, is now in hands of N. V. Potash Export My., New York, a Dutch corporation, operating as a detached sales agent.

Every effort is being made by Department of Justice to settle this suit at an early date. Representatives of the defendants have gone to Europe to discuss matters with the principals, and it is believed that eventual settlement will be through a consent decree.

Involuntary petition in bankruptcy is filed, January 4, against the Rogers-Pyatt Shellac Co., New York. Assets are placed at $1,484,000 and liabilities at $3,713,377.13, apart from contingent liabilities of about $300,000. Petitioners are Paul Dean, of the sales department, claiming $13,142; James W. Byrnes, an officer and director, claiming $12,000; and Harold B. Kampf, $60. Assets of company include $1,000,000 worth of supplies and accounts receivable and company's plant at Jersey City, which creditors value at $484,000.

On October 11, 1928, due to financial difficulties, a committee of trustee banking concerns took charge of the company's affairs. Petitioning creditors allege that these trustees were made preferred creditors by terms of trusteeship.

William Prescott, who retired in 1922 as managing vice-president, American Agricultural Chemical Co., dies in Cleveland, December 30, aged 79. He was an officer of the Cleveland Dryer Co., when that company was absorbed in the formation of the American Agricultural Chemical Co. in 1899. He was then made Cleveland manager and continued there until his election as vice-president in 1906. He then went to the New York offices and shortly afterwards was made managing vice-president, which position he held at his retirement.

Sir John Brunner, a director, until his resignation in October 1927, of Imperial Chemical Industries, Ltd., and formerly associated with Lord Melchett in Brunner, Mond & Co., and Brunner-Mond British Dyestuff Corp., dies in London, January 16, aged 63.

Albert H. Hein, assistant treasurer and credit manager, General Dyestuff Corp., New York, dies at his home in South Orange, January 9, aged 61.

James H. Haste, director, Eastman Kodak Co., and for twenty years, general manager of the Rochester plant, dies in Strong Memorial Hospital, Rochester, January 8, aged 61.

AERO BRAND

Tri Sodium Phosphate

Fines or Crystals

Manufactured from Phosphate Rock obtained from our own mines and Sulphuric Acid of our own production.

Carefully crystallized and dried. Accurately screened to size. Shipped in a package worthy of a quality product, via water or rail from our plant at Warners, N. J. (on New York Harbor).

For full particulars, write or phone Industrial Chemicals Division

AMERICAN CYANAMID COMPANY — AERO BRAND — PRODUCTS

Other Industrial Chemicals supplied by the American Cyanamid Company include:

Anhydrous Ammonia
Aqua Ammonia
Ammonium Chloride
Ammonium Phosphate
Carbonate of Potash
Case Hardening Compounds
Chromic Acid
Copper Sulphate
Cresylic Acid
Diorthotolylguanidine
Diphenylguanidine
Ethyl Lactate
Ethyl Oxybutyrate
Formic Acid
Hydrocyanic Acid, (Liquid)
Red Prussiate of Potash
Sodium Phosphates, Di and Tri
Sulphur
Sulphocyanides (Thiocyanates)
Thiourea
Urea
Yellow Prussiate of Potash
Yellow Prussiate of Soda

AMERICAN CYANAMID COMPANY
535 Fifth Avenue : : New York

AMER-SOL

QUALITY-CONTROL SERIES
Bulletin No. 6
SUBJECT:

Constancy of Quality-Production as Indicated by Uniform Rate of Flow, Hydrometer Tests for "Proof," and Laboratory Check-Ups.

¶ High Alcohol "Proof" or Strength Does Not Necessarily Signify High Alcohol Quality.

¶ Alcohol of high proof may (and frequently does) contain a high and fluctuating percentage of fermentation impurities and undesirable by-products . . . proclaimed by offensive odor and troublesome chemical reactions in products in which it is used.

¶ But AMER-SOL Methods—which insure CONSTANCY OF PRODUCTION—*give both* "Proof" *and* Quality—plus Uniformity.

On this basis we solicit your preference.

"AMER-SOL Quality Control Bulletins," describing the successive stages of the manufacture of AMER-SOL ALCOHOL and their relation to quality of product, will be sent to those who make request on their letter head.

AMERICAN SOLVENTS & CHEMICAL *Corporation*

Executive Offices: CHANIN BUILDING, 122 EAST 42nd ST., NEW YORK
Plants: Harvey, La.; Everett, Mass.; New Orleans, La.; Agnew, Cal.; Albany, N. Y.
Sales Offices and Warehouses all over the country. Unrivalled Service.

AMER-SOL BRAND
Industrial Alcohol
(All Formulas)
SOLVENTS - PLASTICIZERS - CHEMICALS

Court Fixes Selling Price of Monomethylparamidophenolsulfate

The American selling price of monomethylparamidophenolsulfate has been determined by the United States Customs Court and, according to a ruling by Justice George M. Young, the established price in ordinary transactions is $3.23 per pound.

Incidentally, the Court points out that monomethylparamidophenolsulfate is a coal tar product, and as such comes under the provisions of subsection F of section 402 of the Tariff Act of 1922, providing for the method by which the American selling price shall be determined in establishing the dutiable value of products which must pay duty on the basis of American rather than foreign valuation. G. Gennert, importer, raised the question over the valuation of the product which resulted in the decision.

Fertilizer Industry Holds Trade Practice Conference

Resolutions designed to eliminate unfair competition and poor business practices were adopted by 90 representatives, representing about 75 per cent of the fertilizer industry, at a trade practice conference in Washington, D. C., January 29. Among practices enjoined in the resolutions were sales of goods below cost to injure a competitor or disturb the market; secret rebates; and defamation of a competitor.

Sidney B. Haskell, for past year director, agricultural department, Synthetic Nitrogen Products Corp., New York, is elected vice-president of the company. He was formerly director, Soil Improvement Committee, National Fertilizer Association, 1917-20; and director, Massachusetts Agricultural Experiment Station, 1920-27.

A. Stanley Fox, formerly director of research, Grasselli Powder Co., is now with E. I. du Pont de Nemours & Co., at its Eastern Laboratory, Gibbstown, N. J. Previously, he was works manager, Cotton Powder Co., England, and later plant superintendent, Aetna Explosives Co., Drummondville, P. Q., Canada.

Charles K. Davis, formerly assistant general manager, du Pont Viscoloid Co., is elected president and general manager succeeding F. B. Davis, Jr., who resigned to become president and chairman, U. S. Rubber Co.

Frank McCartney, formerly New York sales manager, Monsanto Chemical Works, and now vice-president, Norwich Pharmacal Co., is married January 23 to Miss Bertha Elizabeth Ahern.

Otto T. Bannard, formerly chairman, advisory committee, Alien Property Custodian, and a director, Chemical Foundation, Inc., dies on board the S. S. "President Cleveland" en route to Manila, January 15, aged 74.

Robert Andrews Millikan, director, Norman Bridges Laboratory, California Institute of Technology, and winner, 1923 Nobel prize for his work in measuring the electron, is elected president, American Association for the Advancement of Science.

Herbert H. Suhr, sales manager, Rogers-Pyatt Shellac Co. New York, resigns to join staff of Rogers, Brown & Crocker Bros., Inc.

Dr. R. A. Plumb, general director, Truscon Laboratories, Detroit, is chairman, National Clean Up and Paint Up Committee.

Industrial Rayon Corp. lays cornerstone of Covington, Va., plant, February 1.

Kentucky Color & Chemical Co., Louisville, abandons plans to build on ten-acre site at Kearny, N. J.

Federal Phosphorus Co. Announces Commercial Production of Diphenyl

Federal Phosphorus Co. announces production of diphenyl (C_6H_5-C_6H_5) on a commercial scale. Manufacture of this product was developed to supply the requirements of one of the oil refiners for refining lubricating oils. Use of diphenyl in boilers in place of water permits of high temperatures at low pressures, making it possible to maintain temperatures of 750° F. with pressure of only 115 pounds. Material which has been subjected to these conditions for several months has shown no tendency to decompose.

Thus it offers the possibility of solving problems of distillation and evaporation in connection with products involving high temperatures. In addition to the refining of lubricating oils it offers possibilities in the evaporation of high boiling solutions such as calcium chloride and caustic soda; distillation of high boiling organic chemicals; distillation of fatty acids; and bodying gums and oils for varnishes and printing inks. Various derivatives of diphenyl also are said to show promise as intermediates for the manufacture of dyes.

State of Texas Secures Judgment Against Two Sulfur Companies

An agreed judgment for $307,157 against the Freeport Sulphur Co. and Texas Gulf Sulphur Co. in favor of the state of Texas has been entered in the suits against the two companies for the collection of gross receipt taxes in excess of the returns which the companies made to the state comptroller. The Freeport Sulphur Co. agrees to pay $117,717 and the Texas Gulf Sulphur Co., $189,429. It was also agreed that the two companies shall pay a two per cent. gross receipt tax on a basis of $13 a ton valuation in the future instead of on a $10 a ton valuation, which has been the figure since the law became effective. The added valuation for the current quarter will make the total increase represent about $350,000.

American Chemical Society Elects

Dr. R. R. Renshaw, professor of organic chemistry, New York University, is elected chairman, New York section, American Chemical Society, for 1929. J. C. Davidson, is vice-chairman, and S. P. Burke, secretary-treasurer. The following were elected to the executive committee: C. R. Downs, B. T. Brooks, D. D. Jackson, D. H. Killeffer. Members of the council for the coming year are: M. C. Whitaker, M. H. Ittner, A. E. Hill, H. R. Moody, G. Barsky, R. Fanelli, C. A. Lunn, L. Quigley, F. D. Snell, J. W. H. Randall, C. O. Brown, F. C. Gephart, Mary L. Caldwell, C. R. Downs, L. P. Hammett, C. D. Carpenter, E. R. Jette. Alternates are: W. McTavish and G. O. Curme, Jr.

George H. Hansel, treasurer, International Combustion Engineering Corp. since its inception, is elected a vice-president of the corporation. Walter I. Branigan, formerly treasurer, American Linseed Co., succeeds him as treasurer of International Combustion.

Patent No. 1694097 is issued to Marion B. Hopkins and Hyym E. Buc for cellulose nitrate solutions, on application No. 549189, filed April 3, 1922, following an appeal to the Board of Appeals of the United States Patent Office.

H. J. Osborn, secretary, and J. H. Dunham, assistant treasurer of the company, are elected directors, International Salt Co.

Commissioner Edgar A. McCulloch becomes chairman, Federal Trade Commission, succeeding Abram F. Myers.

Rudolph Muspratt, only son of Sir Max Muspratt, of United Alkali fame, dies January 28, aged 24.

Richland Carbon Co., Monroe, La., plans erection of four-unit carbon black plant near Alto, La.

Quotations on
Phenylhydrazine and its Hydrochloride

We now manufacture on a large scale phenylhydrazine base and its hydrochloride in highly purified forms. A practical grade of the hydrochloride of somewhat lower purity is also available. We can, therefore, supply these chemicals in bulk at a substantial saving over small lot prices. We shall be glad to quote prices for your requirements.

Eastman Kodak Company
Research Laboratories Rochester, N. Y.

.....

Eastman Kodak Company,
Research Laboratories
345 State Street, Rochester, N. Y.

Gentlemen:

Without any obligation to us, please quote price on

☐ Phenylhydrazine
☐ Phenylhydrazine Hydrochloride
☐ Phenylhydrazine Hydrochloride (Pract.)

in lots of.....pounds.

Name .....

Address .....

For
Silverplating
SILVER NITRATE
MERCK
U.S.P., C. P.

Especially adapted to the requirements of the engraver.

SILVER CHLORIDE
and other Silver Salts

GOLD CHLORIDE
GOLD CYANIDE
and other Gold Salts

CHROMIC ACID
guaranteed 99% + pure
CHROMIUM CARBONATE
CHROMIUM SULPHATE

Let us quote on your requirements

MERCK & CO.
INC.
MANUFACTURING CHEMISTS
SUCCESSORS TO
POWERS-WEIGHTMAN-ROSENGARTEN CO.
New York Philadelphia **RAHWAY, N. J.** St. Louis Montreal

The Financial Markets

First Financial Reports For 1928 Show Large Gains in Net Over 1927

E. I. du Pont de Nemours, Commercial Solvents, Texas Gulf Sulphur, Atlas Powder and Hercules Powder Among Those Reporting Increased Net Profits—Freeport Texas Co., is Slightly Lower.

Report of E. I. du Pont de Nemours & Co. and subsidiaries, for year ended December 31, 1928, shows net income of $64,097,797 after interest and federal taxes, equivalent after debenture dividends, to $21.96 a share earned on 2,674,107 average number of no-par shares outstanding during the year. Based on 2,811,050 common shares outstanding at end of year, net income is equal to $20.89 a share, and compares with $45,947,832 or $15.45 a share on 2,661,658 shares in 1927. The 1928 earnings include income of The Grasselli Chemical Co. for month of December only only.

Profit and loss surplus on December 31, last totaled $105,710,319 against $97,785,243 at end of 1927. Income from operations, including equity in earnings of directly controlled companies, increased to $22,873,188 from the figure of $15,742,817 reported for 1927. Investment in the General Motors Corp. yielded $37,929,327, compared with $28,941,597 in the previous year. Incomes from miscellaneous and marketable securities amounted to $5,850,522 for 1928, compared with $2,458,281 for 1927. The figure for 1928 includes $2,286,000 representing profits from the sale of 114,000 shares of United States Steel common stock.

Dividends paid on company's common stock during the year amounted to $17.25 a share, and in addition there was charged against surplus a portion of an extra dividend payable on Jan. 5, 1929, amounting to $1.20 a share, making total dividends of $18.45 a share paid and accrued on common stock for the year.

Consolidated balance sheet as of December 31, 1928, shows total assets of $463,333,203 compared with $351,440,262 at end of 1927. Current assets, including $45,367,630 cash and marketable securities, amounted to $108,329,114 and current liabilities $22,285,011 as compared with current assets of $70,529,986 and current liabilities $8,868,050 at end of previous year.

Report of Atlas Powder Co. for year ended December 31, 1928, shows net income of $5,839,664 after depreciation, federal taxes and including profit of $4,151,000 from sale of holdings in Canadian Industries, Ltd., equivalent after 6% preferred dividends to $20.27 a share earned on 261,438 shares of no-par common stock. Excluding profit after federal taxes from sale of Canadian Industries, Ltd., net income is equal to $6.30 a share on common, comparing with net profit of $2,044,230 or $5.75 a share in 1927.

American Solvents & Chemical Corp. declares a special dividend of $1.50 on account of accumulated dividends on $3 dividend convertible participating preference stock, payable May 1 to stock of record April 10. Payment will reduce accumulated dividends to $4.50, from $6.

A quarterly dividend of 75 cents was paid on this stock January 2, this year, first since January 1, 1927.

Hercules Powder Co. reports for year ending December 31, 1928, net income of $4,038,980 after charges, depreciation, taxes, etc., equivalent after 7% preferred dividends, to $22.04 a share earned on 147,000 shares of common stock. This compares with $3,203,895 or $16.37 a share in 1927.

Texas Gulf Sulphur Co. Earns $5.72 Per Share

Texas Gulf Sulphur Co. Inc., reports for 1928 net income of $14,517,619 after costs, charges and Federal taxes accrued, equivalent to $5.72 a share on 2,540,000 no par capital shares outstanding. This compares with $12,099,374, or $4.76 a share, in 1927.

Net income for final quarter of last year was $4,162,238, or $1.64 a share, which compares with $3,680,723, or $1.45 a share, in the preceding quarter, and with $3,046,277, or $1.19 a share, in the final quarter of 1927.

Total surplus on Dec. 31, 1928, was $15,301,082, against $10,943,463 at the same date in 1927. Balance sheet showed current assets of $14,927,949, compared with $14,504,366 on Dec. 31, 1927; current liabilities of $601,665, compared with $1,180,485; net working capital of $14,326,284, compared with $13,323,881, and total assets of $33,911,948.

Commercial Solvents Net Higher

Report of Commercial Solvents Corp. for year ended December 31, 1928, shows net profit of $2,929,420 after depreciation, federal taxes, etc., equivalent to $13.19 a share earned on 221,974 shares of no par stock outstanding at end of year. This compares with $2,012,874 or $9.24 a share on 217,729 shares in 1927.

Net profit for fourth quarter of 1928 was $829 645 after above charges, equal to $3.73 a share on 221,974 shares, comparing with $898,534 or $4.12 a share on 217,722 shares in preceding quarter and $361,370 or $1.66 a share on 217,722 shares in last quarter of previous year.

Monroe Chemical Co., maker of package dyes, makes public offering at $60 a unit, 30,000 shares of preference stock with warrants, and 15,000 shares of common stock. Each unit consists of one share of preference stock, no par value, one-half share of common stock, and a warrant for the purchase of one share of common stock at $25 until July 1, 1931; at $30 until July 1, 1933, and at $32.50 thereafter until July 1, 1934. The outstanding capitalization of the company will consist of 30,000 shares of no par value preference stock, preferred as to cumulative dividends at the rate of $3.50 a share, and 100,000 shares of no par value common stock.

Fabrics Finishing Co. is organized under the laws of Delaware to acquire the business and substantially all the assets of the Sussex Print Works, Inc.; Fiory & Son Piece Dye Works, Modern Central Silk Dyeing and Finishing Company, Diamond Silk Dyeing and Finishing Company, Inc., and the Masson Dyeing Company, Inc., The new corporation will own the five plants of these companies, which are in Paterson, West New York and Newton, N. J. Public offering of 70,000 shares of no par common at $22.50 share was made coincidently with announcement of company's formation.

Report of Freeport Texas Co. for year ended November 30, 1928, shows net profit of $3,275,576 after expenses and reserve for depreciation, taxes, etc., equivalent to $4.49 a share earned on 729,844 shares of no-par stock. This compares with $3,735,602 or $5.12 a share in previous year.

Net profit for quarter ended November 30, 1928, was $1,323,182 after above charges, equal to $1.81 a share, compared with $680,962 or 93 cents a share in preceding quarter.

Ammonium Persulphate

A new oxidizing and bleaching agent with the following special advantages:

Being in crystal form, it can be stored indefinitely without loss.

Is much easier to handle and control.

Will in many instances be found cheaper and more effective than other chemicals now in use for these purposes.

PENNSYLVANIA SALT MANUFACTURING COMPANY
Incorporated 1850

Executive Offices:
Widener Building, Philadelphia, Pa.

Representatives:
New York **Chicago**
Pittsburgh **St. Louis**

Works:
Wyandotte, Mich.

KUTTROFF, PICKHARDT

BUTYL ACETATE 92%

KUTTROFF, PICKHARDT

TAMASOLS PLASTOLS

KUTTROFF, PICKHARDT

ACETYL CELLULOSE

KUTTROFF, PICKHARDT & CO., Inc.
1150 Broadway, New York

Tennessee Copper & Chemical Issues $5,000,000 Convertible Bonds

Special meeting of stockholders of Tennessee Copper & Chemical Corp. is held February 4 to authorize an issue of $5,000,000 6% convertible bonds. It is proposed to issue immediately between $3,000,000 and $3,500,000 of these bonds which will be convertible into stock at $20 a share during the first year after issuance, at $22 the second year, and $24 the third year.

Purpose is to retire the present issue of convertible bonds of which more than $400,000 have been converted into stock, to provide additional working capital and to make certain improvements and provide equipment for expanding the business in lines which are not highly competitive.

Remainder of the $5,000,000 authorized issue would be made issuable at the discretion of the directors with such conversion features as the directors judge advisable.

Dominion Tar & Chemical Co., Ltd., offers in New York and Canada, a new issue of $4,000,000, 6 per cent. sinking fund debentures, Series A, due 1949, at $100 and interest. Issuing company was organized recently to acquire assets and business of present company of same name. It will own 84 per cent. of stock of Canada Creosoting Co., Ltd., and 74 per cent. of capital stock of Alexander Murray & Co., Ltd. Based on earnings for eleven months ended November 30, 1928, it is estimated that net earnings of company for 1928 will be not less than $1,036,779, or over four times the annual interest requirements on this new issue. The business of the old company has been in continuous operation for over twenty-five years and includes the distillation of tar and the sale of its by-products.

Statement of United States Smelting Refining & Mining Co. and subsidiaries as of October 31, 1928, submitted to New York Stock Exchange, shows total assets of $78,739,140 comparing with $79,086,327 on December 31, 1927, and profit and loss surplus of $18,739,825 against $17,629,242. Current assets on October 31, totaled $12,900,679 and current liabilities $4,868,321 comparing with $14,053,878 and $6,513,026 respectively on December 31, 1927.

Archer-Daniels-Midland Co. declares a quarterly cash dividend of $1 on the common stock, against 75 cents previously. The regular quarterly dividend of $1.75 was declared on the preferred. Both dividends are payable February 1 to stock of record January 21. A dividend of 100% in common stock on the common was also declared, payable March 1 to stock of record February 19.

Directors of New Jersey Zinc Co. vote to recommend to stockholders change in par value of capital stock to $25 from $100 and exchange of four shares of the new stock for every share of $100 par stock held.

Glidden Co. declares usual extra dividend of 12½ cents and regular quarterly of 37½ cents on common, and regular quarterly of $1.75 on preferred, all payable April 1 to stock of record March 16.

For eight months ended December 31, 1928 profit of American Commercial Alcohol Corp. was $953,963 after depreciation but before interest.

International Combustion Engineering Corp. declared regular quarterly dividend of 50 cents on common, payable February 28 to stock of record February 18.

Anaconda Copper Mining Co. plans acquisition of full control of Chile Copper Co., and an increase in authorized capital stock from 6,000,000 to 12,000,000 shares.

Humboldt Sulphur Co., San Francisco, increases capital from $1,000,000 to $1,600,000.

I.C.I. Deposit Receipts Offered in Public Financing Here

A large block of Imperial Chemical Industries, Ltd., American deposit receipts of Guaranty Trust Co. for the ordinary shares of £1 par value, is offered publicly by Colvin & Co., New York, at the market, about $11.25 a share.

The company, was formed in December, 1926, and is one of the largest industrial companies in Great Britain, having capital, as of June 15, 1928, of 16,787,003 7% cumulative preference shares of £1 par, 37,002,407 ordinary shares of £1 par, and 21,666,251 deferred shares of 10s par. Its wholly owned subsidiaries number over forty manufacturing and trading concerns, while thirty other companies are partially controlled. The four principal members to enter the original combine, through an exchange of shares, were Brunner, Mond & Co., Ltd., Nobel Industries, Ltd., United Alkali Co., Ltd., and British Dyestuffs Corp., Ltd. Lord Melchett, formerly Sir Alfred Mond, is chairman of the board.

Imperial Chemical Industries, Ltd., holds a large interest in General Motors Corp., as well as substantial holdings in Allied Chemical & Dye Corp. and E. I. du Pont de Nemours & Co., Inc. Friendly relations are maintained with I. G. Farbenindustrie. Company also has joint interest with Chase Securities Corp. in the Finance Co. of Great Britain and America.

For 1927, company reported gross profits of $22,196,708. During that year $24,300,000 was spent on construction program.

Amer. Commercial Alcohol Offers Rights

Directors of American Commercial Alcohol Corp. have voted to offer common stockholders of record January 31 the right to subscribe to two additional common shares for each five shares held at $80 a share. Rights will expire February 18. They also authorized retirement of $1,100,000 of the company's 6% mortgage, Series A, bonds, which will leave approximately $2,900,000 outstanding. This increases the amount of common stock from 87,382 common shares outstanding at the end of 1928 to 122,344 shares, without giving effect to the possible exercise of option warrants, of which there are 19,618 outstanding.

Block of 43,000 shares of common stock of American Commercial Alcohol Corp. was acquired and offered for sale by a banking group headed by Bauer, Pogue, Pond & Vivian; and including Folds, Buck & Co.; Lorenzo E. Anderson & Co.; Bond & Goodwin & Tucker, Inc.; and Stein Bros. & Boyce. Public offering was made at the market price of about $85 per share and represented no new financing by the company.

Report of Devoe & Raynolds Co., Inc., and subsidiaries, for year ended November 30, 1928, shows net profit of $1,079,573, after charges and federal taxes, equivalent, after 7% dividends on first and second preferred stocks, to $6.26 a share earned on 142,500 average number of combined Class A and Class B no-par common shares outstanding during the year. Based on 150,000 combined Class A and Class B shares outstanding at end of year, net profit is equal to $5.95 a share, and compares with net profit of $930,122, or $5.47 a share, on 135,000 shares of combined Class A and Class B stocks outstanding in preceding year.

Celotex Co. reports for year ended October 31, 1928, net income of $1,380,622 after depreciation, interest, federal taxes, etc., equivalent after 7% preferred dividends to $6.55 a share on 154,635 no-par shares of common stock. This compares with $817,057 or $3.31 a share on common in preceding year.

Columbian Carbon Co. declares extra dividend of 25 cents and regular quarterly dividend of $1, both payable February 1 to stock of record January 17.

Directors of Southern Chemical Cotton Co. at annual meeting paid a four per cent. dividend on preferred stock.

The Industry's Stocks

1929 Jan. 31 Bid	1929 Jan. 31 Asked	1929 High	1929 Low	1928 High	1928 Low	Sales In Jan.	Sales During 1928	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1928	Earnings $-per share-$ 1927
								NEW YORK STOCK EXCHANGE					
109⅜	110½	114⅜	96⅞	99⅜	59	100,800	652.10	Air Reduction	No	683,873	$2.00	9 mo. 3.70	10.74
279	281	281	241	252¾	146	100,700	2 100,800	Allied Chem. & Dye	No	2,178,109	6.00		10.03
....	....	123	121			2,900		7% pfd	100	392,849	7%		62.59
21	21¼	23⅜	20½	26	15⅜	43,600	424,500	Am. Agricultural Chem.	100	333,221	...		1.59
69	70	73½	67½	79⅜	55½	17,900	446,200	pfd	100	284,552	...		7.86
113½	114¼	118⅞	109½	117⅛	70½	962,400	11,579,700	American Can	.25	2,473,998	3.00		4.11
....	....	141⅛	141	147	136¼	1,300	43,200	pfd	100	412,333	7%		31.66
....	....	....	....	192	56¾		2,020,600	American Linseed	100	167,500	...		4.74
....	....	....	....	182	86½		87,789	pfd	100	167,500	7%		11.76
71¾	72	74	60½	63¾	39	298,600	635,500	American Metal, Ltd	No	595,114	*3.00	9 mo. 2.30	3.64
124	125	126½	117	117½	109	6,050	19,800	pfd	100	99,907	6%	9 mo. 18.92	50.27
116¾	117½	117¾	93½	293	169	384,600	2,780,200	American Smelt. & Refin	100	609,980	4.00	6 mo. 10.61	19.64
....	....	138	137	142	131	2,700	57,400	pfd	100	500,000	7%	6 mo. 16.44	30.96
41	42	44⅞	37½	57	6⅜	33,500	1,533,800	Amer. Zinc & Lead	25	193,120	...		...
106½	108	108	103½	117⅞	40	4,500		pfd	25	96,560	...		d2.72
125½	125⅞	128⅞	115½	120½	53¾	2,128,900	12,231,500	Anaconda Copper Mining	50	3,302,817	6.00		3.37
100⅜	101	110⅞	98½	112⅝	55½	52,300	533,500	Archer Dan. Mid	No	213,712	4.00	7.34	5.77
....	....	115	114			380		pfd	100	43,000	7%	46.94	37.39
109½	110	115	103	114	63	20,300	112,700	Atlas Powder Co	No	261,438	4.00	6.30	5.75
105½	106½	106½	105	110½	102	440	5,110	pfd	100	90,000	6%	6 mo. 10.83	22.71
57½	58	68	53½	66½	50	587,900	1,769,200	Atlantic Refining	25	500,000	1.00	9 mo. 21.72	1.83
8½	8¼	9½	8¼	12½	4½	37,300	1,102,900	Butte Copper & Zinc	5	600,000	...		0.10
10½	10⅞	12⅜	10½	16⅜	8½	41,200	551,800	Butte Superior Mng	10	290,198	2.00	9 mo. 0.16	0.94
121	122	129⅜	108	122	65	36,900	162,000	By Product Coke	No	189,936	*5.00	9 mo. 5.78	5.68
3½	3¼	4	3	5⅛	1⅜	63,700	724,500	Calla Lead & Zinc	10	724,592	...	9 mo. ...	0.10
3½	3¼	4	3	47⅜	20½	471,300	2,296,600	Calumet & Hecla	25	2,005,502	2.50	9 mo. 0.95	0.29
54½	54½	28⅜	24½	119	61¼	23,100	1,044,900	Certainteed Prod	No	400,000	...	9 mo. ...	5.31
24⅜	24⅝	81½	77⅞	63½	23⅜	1,700	7,500	7% pfd	100	62,904	7%	9 mo. 0.87	56.80
90½	91⅜	92⅞	71⅜	74¼	37⅜	986,800	2,834,600	Chile Copper	25	4,415,497	3.00	6 mo. 1.96	2.51
7⅞	144½	148	124	134⅛	79	52,900	376,100	Columb Carbon	No	402,131	...	9 mo. 5.24	4.83
241	242	248	227½	250½	137⅞	24,600	710,000	Commercial Solvents	No	217,722	8.00	13.19	9.25
63	63½	64½	60	64½	53	183,100	213,700	Cont. Can	No	1,420,000	5.00		7.21
....	....	124½	124⅜	128	123	140	2,500	pfd	100	51,125	7%		86.82
87½	88¼	91⅞	86½	94	64⅜	72,300	2,312,000	Corn Products	25	2,530,000	2.00	9 mo. 3.00	3.50
....	....	144½	143	146⅜	138½	1,570	19,820	pfd	100	250,000	7%	9 mo. 35.63	42.40
68½	68½	69⅛	59⅜	68¾	34⅜	208,800	1,975,100	Davison Chem	No	480,000	...		6.21
58½	59	59½	55½	61	40	17,100	316,000	Devoe & Rayn A	No	110,000	2.40	6 mo. †5.95	†5.03
....	....	115½	112	120	108	300	4,390	1st pfd	100	17,473	7%	6 mo. 34.71	53.23
117⅛	117¼	118⅛	115⅞	121½	114	2,200	5,900	Dupont deb	100	904,539	6%	9 mo. 57.79	57.03
665	700	665	493	503	310	7,300	597,100	Dupont de Nemours	No	2,661,658	*14.75	20.89	15.45
182	184	188	181½	194½	163	19,000	378,600	Eastman Kodak	No	2,057,560	*8.00		9.61
....	....	127	126	132½	123½	86	2,310	pfd	100	61,657	6%		326.68
....	....	270	234	230	120	1,800	17,200	Fed. Mining & Smelting	100	50,400	...		23.36
77⅜	77⅞	84⅜	77⅛	89⅜	65	133,500	3,777,800	Fleischmann	No	4,500,000	*5.00	9 mo. 3.24	4.30
51	51¼	54⅞	48½	109½	43	186,600	3,602,000	Freeport Texas	No	729,844	4.00	4.49	5.12
72½	73½	81¼	71⅞	94⅜	141½	55,800	2,468,000	General Asphalt	100	206,887	...	6 mo. ...	4.74
113⅜	115	120½	114	150	132	3,400	62,900	pfd	100	68,742	5%	6 mo. d5.09	19.34
41¼	42	44½	36⅞	37	20⅜	207,100	1,565,000	Glidden Com	No	500,000	*2.00	3.37	2.88
....	....	105	103½	105	95	1,370	18,560	prior pfd	100	69,167	7%	32.69	23.91
77⅛	78	82	71½	143½	71	1,010,700	4,724,800	Gold Dust	No		2.50		8.97
75½	76½	79½	74	84	64½	18,200	....	Household Prod	No	575,000	*4.00	6 mo. 2.64	5.22
16	16½	17⅞	15	20⅞	13	20,600	336,200	Intern. Agri	No	450,000			1.34
85½	85⅞	88½	83½	85	48⅜	4,800	120,300	pfd	100	100,000	7%		13.03
67⅜	67½	72⅜	46¼	46	41½	2,107,400	257,000	Intern. Nickel	No	1,673,384	3.00	9 mo. 4.72	3.30
....	....	325	275	....	....	1,100	3,974	ctfs	100	89,126	6%	9 mo. 93.18	68.04
59½	60	63	57½	60	47⅞	20,900	87,700	Int. Print Ink	No	256,022	2.50	6 mo. 2.58	4.98
75	76	76½	55½	69	49½	3,800		Intern. Salt	100	60,771	...	6 mo. 0.05	5.38
231	231½	237	180½	202	96½	414,300	2,116,300	Johns-Mansville	No	750,000	3.00	9 mo. 4.94	4.78
105½	106	113⅞	103½	124½	63½	59,500	1,210,100	Liquid Carbonic Corp	No	125,000	4.00	7.05	5.90
....	....	46	42½	57⅞	45	6,400	62,900	Mac and Forbes	No	378,500	*3.50	9 mo. 2.34	3.62
210	211	216½	175	190	117⅞	17,200	468,600	Mathieson Alk	No	147,207	6.00	9 mo. 9.54	10.93
....	....	125	120⅜	130	115	280	1,850	pfd	100	24,750	7%	9 mo. 63.03	74.06
34½	34½	36	30¼	33	17⅞	184,800	842,000	Miami Copper	5	747,116	2.00		1.53
38¾	39	43⅞	37	58½	29¼	40,100	810,800	National Dist. Prod	No	168,000	...		...
....	....	75½	69½	71⅜	51½		50,100	pfd	No	107,720	...		0.55
....	....	75½	69½	....	....	7,700	....	pfd. tem. ctfs	...	...	...		...
144	148½	158½	132	136	115	57,800	101,800	National Lead	100	309,831	5%		8.90
41½	41⅞	44⅜	38	41½	22⅜	63,900	724,700	Penick & Ford	No	433,773	...	9 mo. 1.32	1.76
246	247	254½	208	217	157	13,900	259,500	Peoples Gas Chi	100	511,521	8%	9 mo. 8.98	10.81
85	85½	94	62	71½	37	531,000	662,200	St Joseph Lead	10	1,950,509	*3.00		2.06
50	50¼	55½	49½	59⅜	37⅜	387,000	5,495,400	Standard Oil Co. of N. J	25	24,419,219	*1.50		1.52
41	41⅛	45⅞	40	45½	28⅜	1,299,600	7,819,600	Standard Oil Co. of N. Y	25	17,118,931	1.60		0.67
18⅞	19	19¼	17½	19⅞	10½	103,300	1,100,400	Tenn. Cop. & Chem	No	794,626	1.00		0.51
77⅞	78	82	76	82½	62½	427,400	6,529,200	Texas Gulf Sulfur	No	2,540,000	4.00	5.72	4.76
224½	224⅞	225	196½	209	186½	377,500	3,384,600	Union Carbide	No	2,742,072	6.00	9 mo. 7.16	9.53
151	152	154⅞	128	138	102½	140,700	819,300	U. S. Ind. Alc	No	240,000	6.00	6 mo. 3.90	7.26
124⅜	125⅛	125⅞	124½	125⅞	118⅜	280	6,979	pfd	100	60,000	7%	6 mo. 19.12	36.03
107½	108⅛	113⅜	95⅜	111½	60	279,900	3,567,300	Vanadium Corp	No	376,637	*4.00	6 mo. 2.57	4.97
21⅜	22⅛	24⅜	18½	20⅜	12	215,600	526,200	Virginia Car. com	No	486,700	...	0.69	...
63½	64	65½	58⅜	64½	44⅜	29,600	243,800	6% pfd	100	213,392	...	7.57	d5.41
....	....	97⅜	94½	99½	88½	2,500	31,900	7% pfd	100	125,000	7%	20.09	d1.70
								NEW YORK CURB					
23	21	23	17½	31½	16½	5,000	190,200	Acetol Prod	No	60,000	2.40		8.69
41	41	43½	36	42⅜	33½	5,600	25,500	Agfa Ansco	No	300,000	...		
180	178	189	146	197½	120	9,710	157,400	Aluminum Co. of America	No	1,472,625	...		3.28
105⅜	105⅞	105½	103½	110½	104	1,000	53,900	pfd	100	1,472,625	6%		9.28
85	85	86	78	87⅞	74	12,200	....	Amer. Com. Alc	No	77,000	...	3 mo. 2.66	...
23½	21¼	26½	13½	65	30⅜	150,500	14,400	Amer. Cyan	20	428,465	8%	†3.67	†2.92
....	....	....	....	24	13	14,800	531,100	Amer. Rayon Prod	No	123,500	...	15 mo. ...	...
36½	35⅞	37⅞	26½	28⅛	11⅜	42,700	205,800	Amer. Sol. & Chem. com	No	160,000	...	1.58	0.07
51½	51⅝	55⅞	46¼	47⅞	25½	29,200	233,400	pfd	No	100,000	...	6.52	3.17
41	40	45⅜	33	54	26½	29,200	255,300	Anglo Chile Nitrate	No	1,756,750	...	6 mo.. ...	...
5⅛	5½	8⅛	4⅜	33⅜	7	11,900	452,500	Br. Celanese	No	2,650,000	...	0.55	...
41	39	....	....	46½	41	100	1,200	Canad. Ind. Alc	No	1,092,915	1.52	†2.87	†2.49
205	218	219½	180	226	156	400	6,340	Casein Co	100	21,196	*9%		7.98
44½	44¾	53⅜	41½	103	36½	7,900	328,600	Celanese Corp. of Am	No	1,000,000	...		1.72
....	....	....	....	122	34	1,300	34,300	Celluloid Co	No	194,952	...		0.87
110½	110	....	....	132	103½	600	3,700	1st pfd	No	23,882	7.00		11.94
....	....	....	....	97½	75	100	8,050	7% pfd	No	24,551	7.00		9.96
....	....	67½	62	73¾	49	2,360	460,500	Celotex pfd	100	52,532	7%	26.28	15.55
77½	77½	80¾	77	92	75	5,900	545,000	Colgate-Palmolive Peet			2.00		
24½	21½	25½	21½	....	....		65,320	Courtaulds	£1	12,000,000	22½%		26.55%
....	....	....	....	24⅜	20	5,300	42,700	Am. dep-rects	...	...	...		...

1929 Jan. 31 High	1929 Jan. 31 Low	1929 High	1929 Low	1928 High	1928 Low	Sales In Jan.	Sales During 1928	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1928	Earnings $-per share-$ 1927
97¼	97	97¾	96¾	380	192	50	1,840	Hercules Powder	No	147,000	14%	22.04	16.36
....	....	121¾	119½	125	118½	230	1,900	pfd	100	114,241	7%	9 mo. 24.69	28.05
....	....	....	....	23	7½	2,700	19,700	Heyden Chem	10	150,000	...		1.02
....	....	9¼	8⅝	98	38½	100	13,550	Monsanto Chem	No	110,000	2.50	9 mo. 6.30	6.11
....	....	....	....	....	....	349	....	Penn Salt	50	150,000	5.00	8.27	8.09
8¾	8⅜	9¼	7⅜	9⅜	6¼	12,200	20,200	Pyrene Mfg	10	219,470	.80		0.70
....	....	....	....	....	....		210,435	Royal Baking, new com	100	800,000	1.00	6 mo. 0.53	1.14
....	....	....	....	111½	103		2,950	pfd	100	100,000	6%	6 mo. 7.26	15.11
....	....	88⅜	88¼	92	65½	85	3,500	Sherwin Williams	20	594,445	4.00	6.99	6.42
....	....	28⅜	23⅜	29	17	48,900	140,300	Silica Gel	No	600,000	...		
....	....	....	....	9¾	6½		5,500	Snia Viscosa	120 lire	8,333,333	...		3.01 lire
....	....	....	....	10	5⅜	100	12,500	dep-recpts	...	...	...		...
44⅜	44⅜	47⅛	40½	42	31½	22,300	81,700	Spencer Kellogg	No	500,000	1.60	3.59	2.37
136⅛	136½	139½	135½	150½	125	6,750	70,750	Swift & Co	100	1,500,000	8%	9.87	8.13
501	500	550	490½	630	450	2,080	56,480	Tubize "B"	No	78,858	10.00		
66	66	73	65	100	53⅜	3,600	69,950	U. S. Gypsum	20	691,502	1.60	6 mo. 4.42	10.08
								CLEVELAND					
140	140	140	140	147½	104	700	958	Cleve-Cliff Iron	No	400,000	4.00		9.74
....	....	225	220	225	112½	157	483	Dow Chem	No	120,000	6.00		
....	....	....	....	107	103⅜	80	80	pfd	100	30,000	7%		
....	....	....	....	....	....	20	2,000	Glidden	No	500,000	*2.00	3.37	2.88
105	105	105	105	104½	96	240	249	prior pfd	100	69,167	7%	32.69	23.91
....	....	88	87	95	65½	1,266	...	Sherwin Williams	25	594,445	4.00	6.99	6.42
107¾	107¾	108	107¾	109½	106	539	...	pfd	100	125,000	6%	39.21	37.82
28½	28½	28	28	28	24¾	760	4,670	Wood Chemical Prod. "A"	No	20,000	2.00		7.75
								CHICAGO					
77¾	77¼	72	65	73	49	3,650		Celotex	No	154,635	3.00	6.57	3.31
....	....	....	....	92	80			pfd	100	52,532	7%	26.28	15.55
....	....	105	104	96	91½	2,800		Monsanto Chem	No	110,000	2.50	9 mo. 6.30	6.11
136	136½	138	136	146	127½	5,840		Swift & Co	100	1,500,000	8%	9.87	8.13
66	66	68⅞	67	100	55	10,400		U. S. Gypsum	20	691,502	1.60	6 mo. 4.42	10.08
								CINCINNATI					
....	....	126	126	....	.....	5	406	Fleishmann pfd	100	12,200	6%	9 mo. 1,197.09	1,589.49
299½	299½	299½	290	300	249	4,440	27,938	Proc. & Gam	20	1,250,000	8.00	11.96	11.38
								PHILADELPHIA					
....	....	98	98	109½	92	1,600	24,090	Penn. Salt	50	150,000	5.00	8.27	8.09
193¼	189⅞	177¾	170	173½	114¼	310,060	1,881,284	United Gas Imp	50	3,903,791	6.00		6.28
								MONTREAL					
21	20½	21	20½	....	....	9,062	....	Asbestor Corp	No	200,000	...		0.87
66	66	66	66	.	....	1,870	....	pfd	100	74,564	7%		9.32
40¾	40	40¾	40	....	....	34,748	....	Canada Ind. Alc	No	1,092,915	1.52	†2.87	†2.49
91	89	91	89	...	...	54,517	....	Shawinigan W. & P	No	1,844,700	2.00		2.41
								BALTIMORE					
....	....	28	26	28¼	17	1,600	30,313	Silica Gel	No	600,000	...		
Bid	**Asked**							UNLISTED					
79	81	.....	....	80	70		...	Agfa Ansco, pfd	100	50,500	...		...
93	97	.....	....	375	190		...	Hercules Powd., com	No	147,000	14%	9 mo. 15.10	16.36
77	81	.....	....	82	64		...	Merck. & Co., pfd	100	33,950	...		...
106	106	.....	....	169	116		...	Newport	1	929,498	...		0.19

*Includes extra dividends. †Class A and class B shares combined. d Deficit.

The Industry's Bonds

1929 Jan. 31 High	1929 Jan. 31 Low	1929 High	1929 Low	1928 High	1928 Low	Sales In Jan.	Sales During 1928	ISSUE	Date Due	Int. %	Int. Period	Orig. (1) Offering $
								NEW YORK STOCK EXCHANGE				
106½	106	106½	104⅜	106¾	104	95	2,267	Am. Agri Chem	1941	7½	F. A.	30,000
95½	95½	95½	93½	97	92	81	647	Amer. Cyanid	1942	5	A. O.	
101½	100½	101½	100½	102¾	99½	191	3,620	Am. Smelt & Refin "A" 5%	1947	5	A. O.	...
99	98⅜	100	94½	105½	92	755	5,780	Anglo Chilean	1945	7	M. N.	16,500
....	....	102½	100⅜	103⅜	99⅞	66	1,232	Atlantic Refin	1937	5	J. J.	15,000
101	101	102	101	103½	100	28	275	By product Coke	1945	5½	M. N.	8,000
....	....	103	92½	103½	100	2	148	Corn Product Refin	1934	5	M. N.	10,000
....	....	92⅝	92	117	106	30	1,783	General Asphalt	1939	6	A. O.	5,000
93	93	.....	....	95⅜	89½	8	144	Int. Agric. Corp	1932	5	M. N.	30,000
81	81	81½	80	86½	77	2	258	Int. Agri. Corp. stamped. extended	1942	5	M. N.	7,020
....	....	177	177	205	113		3,914	Liq. Carbonic Corp	1941	6	F. A.	5,000
....	....	127	118	....	...	494	7,086	Montecatini	1937	7	J. J.	
....	....	94½	93	....	...	419	2,800	Ex War	1937	7	J. J.	
113	113	112½	112½	....	...	3	66	People's Gas & Coke	1943	6	A. O.	10,000
....	....	105½	104½	108½	102	62	1,120	Refunding	1947	5	M. S.	40,000
102⅞	102⅜	103	102	104	102	331	6,893	Standard Oil N. J	1946	5	F. A.	120,000
106	106	114	104	120	101⅛	83	1,465	Tenn. Cop. and Chem	1941	6	A. O.	3,000
....	....	.....	....	91⅞	82	1	93	Va. Iron C. & C	1949	5	M. S.	
								NEW YORK CURB				
23⅛	21½	26¾	13½	103¾	100	207	4,228	Alum. Co. of Am 52	1952	5	M. S.	
127	127	132	115½	121½	98	443	2,316	Amer. Com. Alc	1943	5	M. N.	
118½	118	122	114	125	99	518	1,293	Amer. Solv. & Chem	1936	6	M. S.	
				101⅞	99⅜		1,404	Anaconda Cop	1929	6	J. J.	25,000
99¾	99¼	99⅞	98⅞	101⅜	97½	319	3,714	Koppers Gas and Coke	1947	5	J. D.	25,000
....	....	101	100	103½	98	106	264	Natl. Dist. Prod	1935	6½	J. D. 15	3,500
93¾	93¾	94½	93¾	98⅜	93⅜	90	4,998	Shawinigan W & P	1967	4½	A. O.	
....	....	28¾	23½	106⅜	100	13	114	Silica Gel. 6½% with warr	1952	6½		
....	....	98	97¼	100	95	53	1,447	Solvay Am. Invest. Corp	1942	5	M. S.	15,000
100	99¾	100⅛	99⅝	101⅛	99⅜	253	3,226	Swift & Co	1932	5	A. O.	50,000
104	104	104	102½	104	99½	40	519	Westvaco Chlorine Prod	1937	5½	M. S.	2,500

WM. S. GRAY & CO.

342 MADISON AVE.,

NEW YORK

Vanderbilt 0500 Cables: Graylime

Acetate of Lime

Acetate of Soda

Acetone C. P.

Methanol
(all grades)

Methyl Acetone

Denatured Alcohol
(all formulas)

Formaldehyde

Phenol U. S. P.

Benzol

Whiting

Magnesium Carbonate

Magnesium Oxide

Quinine Bisulphate

New Incorporations

Rufscott Corp., Brooklyn, N. Y., agricultural, mineral and chemical products. 3,000 shs com. Registrar & Transfer Co.

Crystal Products Co., disinfectants. $20,000. Heller & Quiss, Flushing.

Bunnell Photo, Rochester, chemicals. $25,000 pf. 250 shs com. W. F. Manning, Rochester.

Molasses Distributors Corp., Wilmington. 1,000 shs com. Corp. Trust Co. of Am.

Bergen Chemicals, Inc., Ridgewood. $25,000. David J. Marks, New York City.

Mills Alloys, Inc., Wilmington, metals, alloys, chemicals. $160,000 shs com. Corp. Trust Co. of America.

Ralph P. Branche, Albany, chemicals. $200,000. Corp. Holding Co., Troy.

B. E. Semple Co., Hempstead, chemicals. $10,000. A. W. Brown, Mineola.

The Calumet Co., Wilmington, turpentine, resin, other forest products. 1,000 shs com. Corp. Trust Co. of America.

G. & S. Art Studios, chemicals—Kheel & Kheel, 315-7th Ave. 10,000.

Superior Manufacturing Co., Elizabeth, chemists—Grossman & Kwalick, Elizabeth $100,000.

Armour Chemical Co., Newark—Furst & Furst, Newark 1,000 shs. com.

Rhuma-Jell Chemical Co.—N. Gordan, 299 B'way $10,000.

New Jersey Lacquer Co., Inc., North Bergen, manufacture of lacquer, etc. S. A. Neuman, New York City $40,000.

Palmer Gas Products Corp., Wilmington, carbon, carbon products—Corp. Trust Co. of America $10,000.

Syntharome Laboratories, chemicals—P. Kirschner, 26 Court St. 100 shares.

General Brevets, Inc., New York City, chemists, druggists—Louis J. Grossman, Wilmington $90,000.

Tanphenol Corp., chemicals—N. Seaman, 2 Lafayette St. $20,000.

Kurland Chemical Co.—Pershan & Friedman, 26 Court St. $10,000.

Gillican Chipley Sales Co., Dover, rosin, turpentine, tar—U. S. Corp. Co. $300,000.

Soilvita Co., Wilmington, fertilizers—Corp. Trust Co. of America $100,000 500 shs com.

Anacin Co. Ltd., Walkerville, Ont. $50,000. chemicals. Charles H. C. Leggott; Harry L. Wright. Jessie M. Perry.

Louis Sanders Co. of Canada Ltd., Toronto, Ont. $50,000, chemicals James T. Gow, Robert E. Anglin, Kenneth M. Lash.

Thermoid Co., Wilmington, materials which enter rubber manufacture. $2,000,000, 600,000 shs com. Corp. Trust Co. of America.

Standard Products Co. Inc., Wilmington, paints, oil, chemicals. 285,000 shs com. Corp. Trust Co. of America.

Brooklyn Coke and By-Products Corp., $7,000,000 pf, 1,000 shs com. T. J. Michie, Jr., Pittsburgh, Pa.

Bas Products, Brooklyn, chemicals. $45,000. M. Kandler, 455 East 95th St., Brooklyn, N. Y.

Day Chemical Co., Newark, N. J., manufacture chemicals. $100,000. Benjamin Cohn, Newark, N. J.

Torb, Inc., New York, drugs, chemicals, pharmaceutical products. $50,000, 2,000 shs com. U. S. Corp. Co.

Seaboard Fertilizer Co., New York City, chemicals. $20,000. M. Aberach, 41 Park Row, New York City.

Western Fluorspar Co., Dover, fluorspar, lead, zinc. 2,000 shs com. Corp. Trust Co. of Delaware.

The Trend of Prices

Events During January Bear Out Optimism Expressed Earlier in Year

Satisfactory Conditions Exist Throughout Business and Industry Generally—Many Chemical Items in Extremely Heavy Demand Force Producers to Capacity to Meet Shipments—Ammonia and Copper Sulfate Advance—Boric Acid Lower.

Events since the turn of the year have borne out the optimistic expressions with which industry greeted the opening of 1929, and there is now every assurance that business will continue active and profitable for a considerable part of the present year. Preliminary reports for January indicate a steady increase in the output of petroleum and greater activity in the steel, automobile, coal and lumber industries, following the preliminary lull during the inventory period at the end of last year.

Discussing the credit situation, the Federal Reserve Board says that in January the return flow of currency from circulation to the Reserve Banks resulted in a liquidation of member bank borrowing and small declines in Reserve Bank holdings of acceptances and of United States securities. Total bills and securities showed a decline of about $450,000,000 for the period from Dec. 26 to Jan. 23, and were in about the same volume as in midsummer of last year.

At member banks there was an increase in the total volume of loans at the turn of the year, due chiefly to year-end financial settlements and the temporary withdrawal of funds loaned by corporations in the New York market. In January, deposits and loans of member banks declined to about the level of the early part of December.

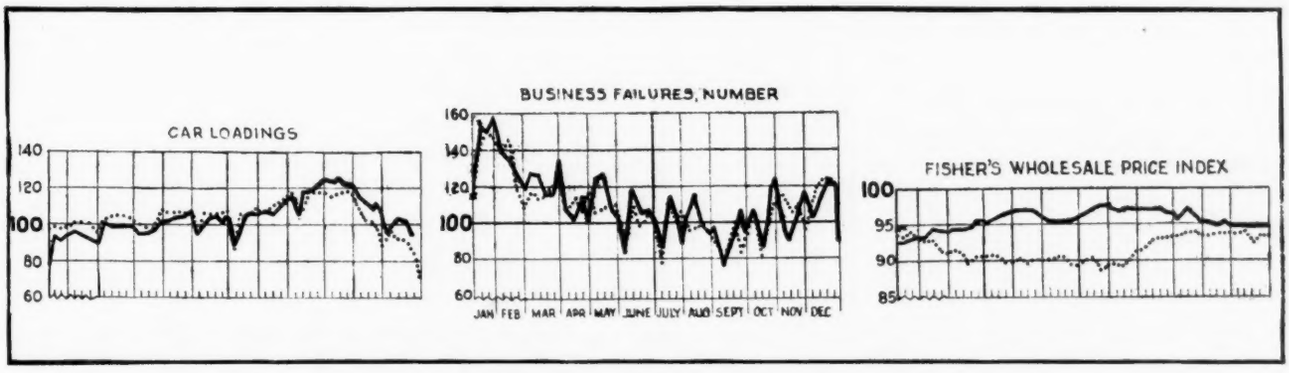
In the money market rates on call loans declined sharply in January, while rates on time loans on securities remained firm and rates on acceptances advanced.

The very satisfactory conditions existing in business and industrial circles generally is also borne out in the chemical industry, for the trade generally reports that sales during January have proved to be in very satisfactory volume and in many instances the movement has proved to be considerably larger than that for the same period a year ago. There are comparatively few soft spots in the situation, and for this reason the larger consumers appear to be placing considerable confidence in the market.

Perhaps the outstanding feature of the chemical market during the past month has been the number of items which have been in such great demand that producers have been working overtime in an effort to keep up with it. All of the mineral acids, and sulfuric particularly, have been subject to very heavy buying and all plants are shipping material as fast as it is produced to keep pace with it. A period of lighter demand would doubtless be welcomed by producers of oxalic acid, for although manufacturers are gradually catching up with deliveries, material for spot delivery has been very limited. Demand for phenol has also surpassed all expectations and the close of January found this item, too, in comparatively short supply, although producers expect the situation to be remedied within a short time. Sodium nitrite is the other item which finds producers working to capacity to make shipment. There is no question of ability to meet consuming requirements but merely one of meeting unanticipated heavy demand at this time. It is needless to add that the tight situation existing in these items has kept the market in very strong position during the past month.

The alkali group also has been in very strong position, lead by soda ash which is said to be in the firmest condition it has ever been for the past six or seven years. Producers are having no difficulty in exacting the premium for spot business from those who have not contracted for their needs. Ammonia has been firm and in such good demand that the opening of February finds an advance in price of ½c lb. on anhydrous over the entire schedule. The past month has also witnessed an advance of 15c per 100 lbs. in the price of copper sulfate, placing it upon a basis of $5.65 per 100 lbs. This has been due not so much to any unusual demand, as to the fact that production costs have been constantly increasing with continued advances in the price of copper. The metal price will probably go higher yet and sulfate maybe expected to follow it.

The only price reduction of note during the past month, was one in boric acid the price of which was lowered in order to put it more in line with existing prices on borax. Mercury has been inactive and weak, caused by a lack of demand and excess offerings by domestic producers. Activity in the fertilizer group has been negligible and the increase in price on sodium nitrate due merely to continued high ocean freight charges. The price tendency in the oils and fats group has been higher, with trading quite active all along the line



Business indicators prepared by the Department of Commerce. The weekly average 1923-1925 inclusive = 100. The solid line represents 1928 and the dotted line 1937.

Prices Current

Heavy Chemicals, Coaltar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Naval Stores, Fatty Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Imported chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f. o. b., or ex-dock. Materials sold f. o. b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Jan. 1929 $1.028

Acetone — Demand continues very heavy and the market is firm. Both domestic and foreign sales have proceeded in about the same volume as last month, and prices have been firmly maintained.

Acid Acetic — Is now in better supply and deliveries have been moving freely during the past month. As this is the heavy production season for the wood distillers, acetate of lime has become available in better quantities, which in large measure accounts for the present position of this acid. Added to this is the fact that new production is taking care of many demands especially in the South, which is rapidly becoming the center of the artificial silk industry. Consumption, however, continues to increase and should maintain this market in firm position. Exports during the first eleven months of 1928 amounted to 285,509 pounds.

Acid Boric — Has been reduced in price during the past month and is now quoted at 5¾c @ 6c lb. This reduction was instituted primarily to bring this item more in line with borax prices which have been lower for some considerable time. Demand has been good and the market firm.

Acid Citric — With the conditions on the domestic product firm and unchanged, chief interest during the past month centered about a report to the Department of Commerce from Italy which said that exports of calcium citrate for the period, January 1-September 30, 1928, reached a total of 13,971 quintals, or 3,073,620 pounds, as compared with 22,708 quintals, or 4,955,760 pounds, in the corresponding period of 1927. This decrease is the direct result of the application of the Government's policy of restricting annual sales of citrate to certain specified quantities. The "Camera Agrumaria" was authorized to sell during the fiscal year, December 1, 1928, to November 30, 1929, at the minimum price of 550 lire per quintal (of 220 pounds). The previous price was 520 lire per quintal. (The average value of the lire in 1928 was $0.0525 United States currency). There were exported 26,974 quintals of citric acid during the first nine months of 1928, against 15,440 quintals for the same period of 1927, an increase of 73 per cent. Shipments to the United States in 1928

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
.26	.18½	.24	.24	Acetaldehyde, drs 1c-1 wks...lb.	.18½	.21	.21	.18½
				Acetaldol, 50 gal dr.....lb.	.27	.31		
.24	.23	.20	.20	Acetanilid, tech, 150 lb bbl...lb.	.23	.24	.24	.23
.35	.29	.29	.29	Acetic Anhydride, 92-95%, 100 lb cbys.....lb.	.29	.35	.35	.29
.....	.....	.38	.32	Acetin, tech drums.....lb.	.....	.....		
.15	.13	.....	.....	Acetone, CP, 700 lb drums c-l	.....	.15	.....	.....
.15	.13	.12	.12	wks.....lb.	.....	.15	.15	.15
1.75	1.65	1.65	1.65	Acetone Oil, drs NY.....gal.	1.65	1.75	1.75	1.65
.45	.42	.42	.42	Acetyl Chloride, 100 lb cby...lb.	.42	.45	.45	.42
				Acetylene Tetrachloride (see tetrachlorethane).....				
				Acids				
				Acid Acetic, 28% 400 lb bbls				
3.88	3.38	3.38	3.38	c-l wks.....100 lb.	.....	3.88	3.88	3.88
13.68	11.92	11.92	11.92	Glacial, bbl c-l wk.....100 lb.	.....	13.68	13.68	13.68
1.00	.98	.98	.98	Anthranilic, refd, bbls.....lb.	.98	1.00	1.00	.98
.80	.80	.80	.80	Technical, bbls.....lb.	.....	.80	.80	.80
2.25	1.60	1.60	1.25	Battery, cbys.....100 lb.	1.60	2.25	2.25	1.60
.60	.57	.57	.57	Benzoic, tech, 100 lb bbls....lb.	.57	.60	.60	.57
.11	.08¼	.08¼	.08½	Boric, crys. powd, 250 lb. bbls.....lb.	.05¾	.06	.06	.05¾
1.25	1.25	1.25	1.25	Broenner's, bbls.....lb.	.....	1.25	1.25	1.25
.90	.85	.85	.80	Butyric, 100% basis cbys.....lb.	.85	.90	.90	.85
4.85	4.85	4.90	4.85	Camphoric.....lb.	.....	4.85	4.85	4.85
.28	.13	.25	.25	Carbolic, 10%, 50 gal bbls....lb.	.13	.14	.14	.13
.16	.15	.15	.15	Chlorosulfonic, 1500 lb drums wks.....lb.	.15	.16	.16	.15
.30	.25	.37	.25	Chromic, 99%, drs extra.....lb.	.25	.30	.30	.25
1.06	1.00	1.00	1.00	Chromotropic, 300 lb bbls....lb.	1.00	1.06	1.06	1.00
.44½	.59	.44½	.43	Citric, USP, crystals, 230 lb. bbls.....lb.	.46	.59	.59	.46
.97	.95	.95	.95	Cleve's, 250 lb bbls.....lb.	.95	.97	.97	.95
.70	.68	.60	.57	Cresylic, 95%, dark drs NY...lb.	.70	.72	.72	.70
.72	.72	.70	.60	97-99%, pale drs NY.....lb.	.72	.77	.77	.72
.12	.11	.11	.10	Formic, tech 85%, 140 lb. cby.....lb.	.11	.12	.12	.11
.55	.50	.50	.50	Gallic, tech, bbls.....lb.	.50	.55	.55	.50
.74	.74	.74	.69	USP, bbls.....lb.	.....	.74	.74	.74
1.06	1.00	1.00	1.00	Gamma, 225 lb bbls wks.....lb.	1.00	1.06	1.06	1.00
.63	.57	.57	.57	H, 225 lb bbls wks.....lb.	.57	.63	.63	.57
.67	.67	.67	.65	Hydriodic, USP, 10% soln cby lb.	.....	.67	.67	.67
.48	.45	.45	.45	Hydrobromic, 48%, coml, 155 lb cbys wks.....lb.	.45	.48	.48	.45
				Hydrochloric, CP, see Acid Muriatic.....			.....	.....
.90	.80	.80	.80	Hydrocyanic, cylinders wks...lb.	.80	.90	.90	.80
.06	.06	.06	.06	Hydrofluoric, 30%, 400 lb bbls wks.....lb.	.....	.06	.06	.06
.11	.11	.11	.11	Hydrofluosilicic, 35%, 400 lb bbls wks.....lb.	.....	.11	.11	.11
.85	.85	.85	.85	Hypophosphorous, 30%, USP, demijohns.....lb.	.....	.85	.85	.85
.06	.04¾	.05½	.05½	Lactic, 22%, dark, 500 lb bbls lb.	.04¾	.05½	.05½	.04¾
.13½	.12	.13	.13	44%, light, 500 lb bbls.....lb.	.12	.12½	.12½	.12
.54	.52	.52	.52	Laurent's, 250 lb bbls.....lb.	.52	.54	.54	.52
.60	.48	.....	.....	Malic, powd., kegs.....lb.	.48	.60	.60	.48
.65	.60	.60	.60	Metanilic, 250 lb bbls.....lb.	.60	.65	.65	.60
.08	.07¾	.07¾	.07¾	Mixed Sulfuric-Nitric..... drs wks.....N unit	.07¾	.08	.08	.07¾
.01½	.01	.01	.01	drs wks.....S unit	.01	.01½	.01½	.01
.21	.18	.21	.18	Monochloroacetic, tech bbl..lb.	.18	.21	.21	.18
.65	.65	1.65	1.65	Monosulfonic, F Delta bbls...lb.	.....	.65	.65	.65
1.40	1.35	1.35	1.35	Muriatic, 18 deg, 120 lb cbys c-l wks.....100 lb.	.....	1.40	1.40	1.40
1.80	1.70	1.70	1.70	20 degrees, cbys wks...100 lb.	1.70	1.80	1.80	1.70
.95	.85	.95	.95	N & W, 250 lb bbls.....	.85	.95	.95	.85
.59	.55	.55	.55	Naphthionic, tech, 250 lb.....	.55	.59	.59	.55
5.00	5.00	5.00	5.00	Nitric, 36 deg, 135 lb cbys c-wks.....100 lb.	.....	5.00	5.00	5.00
6.00	6.00	6.00	6.00	40 deg, 135 lb cbys, c-l wks.....100 lb.	.....	6.00	6.00	6.00
.11½	.10¾	.11¼	.11	Oxalic, 300 lb bbls wks NY...lb.	.11	.11½	.11½	.11
.08½	.08	.08	.07	Phosphoric 50%, 150 lb cby..lb.	.08	.08½	.08½	.08
.16	.16	.19	.16	Syrupy, USP, 70 lb drs....lb.	.....	.16	.16	.16
.50	.50	.50	.50	Picramic, 300 lb bbls.....lb.	.....	.50	.50	.50
.50	.40	.45	.30	Picric, kegs.....lb.	.40	.50	.50	.40
.86	.86	.86	.86	Pyrogalic, technical, 200 lb bbls.....lb.	.....	.86	.86	.86
.32	.27	.27	.27	Salicylic, tech, 125 lb bbl.....lb.	.27	.32	.32	.27
.16	.15	.15	.15	Sulfanilic, 250 lb bbls.....lb.	.15	.16	.16	.15
1.95	1.60	1.60	1.60	Sulfuric, 66 deg, 180 lb cbys 1c-1 wks.....100 lb.	1.60	1.95	1.95	1.60
1.37½	1.20	1.20	1.20	1500 lb dr wks.....100 lb.	1.50	1.65	1.65	1.50
1.12½	1.12½	1.10	1.10	60°, 1500 lb dr wks....100 lb.	1.27½	1.42½	1.42½	1.27½
1.52½	1.52½	1.50	1.50	Oleum, 20%, 1500 lb. drs 1c-1 wks .....100 lb.	.....	1.52½	1.52½	1.52½
42.00	42.00	42.00	42.00	40%, 1c-1 wks net .....ton	.....	42.00	42.00	42.00

News Notes

"Over a Century of Service and Progress"

FEBRUARY, 1929

Sal Ammoniac, White & Gray Granular:

Despite low prices which have been made on the domestically produced material, imports seem to be coming in with fair regularity. We are at all times in excellent position to supply the material from spot stocks at Boston, New York, Philadelphia and Baltimore, and we would appreciate receiving your inquiries.

Barium Carbonate:

The demand has eased off somewhat, which is a natural position during the Winter months. Shipments from Europe are continuing to come in, in spite of the increased duty. Prices are slightly firmer owing to higher ocean freight rates. We are in position to ship carload and less carload lots from spot stocks.

Bleaching Powder [Chloride of Lime]:

Our works at Niagara Falls are in full production, and the demand for the product seems to be keeping up nicely. We can make immediate shipment of single drums to carloads; three distinct drum packings, 800 pounds, 300 pounds and 125 pounds. We are also prepared to furnish special test material to meet buyers' requirements.

Caustic Soda:

Our belief is that manufacturers generally are pretty well sold up. The demand has been exceedingly good, and a firmer tendency in price is noted. We are prepared to furnish the Solid, Flake and Liquid forms in various size packages on short notice.

Copper Sulphate [Blue Vitriol]:

An increase in the price is asked for this material owing to a higher copper market. Withdrawals have been noticeably good for what might ordinarily be known as "off season". Supplies of large crystals, small crystals and powdered are available for prompt shipment.

Factories:
Niagara Falls, N. Y.
Murphysboro, Ill.
Owego, N. Y.
Jersey City, N. J.

INNIS, SPEIDEN & CO.
INCORPORATED
46 CLIFF STREET, NEW YORK.

Branches:
Chicago
Boston
Philadelphia
Cleveland
Gloversville

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Jan. 1929 $1.028

(first eight months) amounted to 257 quintals valued at 407,664 lire as compared with 360 quintals worth 515,658 lire, exported in the corresponding period of 1927.

Acid Cresylic — Continues rather unsettled as supplies are rather more abundant than present conditions require. This is especially true with regard to the dark grade where the surplus has been noticeable since the closing months of last year. Imports during the first eleven months of 1928 totaled 83,254,894 gallons as compared with 86,868,102 gallons during the same period of 1927.

Acid Oxalic — The scarcity has become quite pronounced. Producers are reported to be still far behind demand despite strenuous efforts to catch up with back orders. Imports for the first eleven months of 1928 amounted to only 829,208 pounds, as compared with 1,722,868 pounds in the similar period of 1927. Of course, in those figures lies the explanation of the present shortage for domestic production, although greatly increased, was not quite prepared to fill such a tremendous gap.

Acid Sulfuric — Although all of the mineral acids are in strong position, sulfuric leads them all, being in unusually heavy demand, with supplies limited and with but little to spare. That consumption is increasing rapidly in this country is indicated by the fact that exports during the first eleven months of 1928 amounted to only 24,093,631 pounds, as compared with 33,828,101 pounds in the same period of 1927.

Albumen — Edible egg albumen has fallen off somewhat in price and is now quoted at 76c @ 81c lb., although technical remains unchanged. Cost-of-production investigation by Tariff Commission has not as yet had any apparent effect upon this market.

Alcohol — Is reported to be in excellent position, very firm and with a pronounced upward tendency. It is pointed out that, comparatively speaking, prices are lower to-day than at the same time last year, if the advanced cost of the raw material is taken into consideration. Molasses is 4c @ 5c gallon higher than last year, so that it is quite probable that increased production costs may make themselves felt in the form of higher alcohol prices before the middle of the year. Total alcohol on hand as of November 30, 1928, was 10 927,618 gallons. This represented a decrease of 2,470,118 gallons from October 31, 1928, a decline of approximately 18%. Compared with November 30, 1927, there was a decline of approximately 25.5%, inventories at that time amounting to 14,671,900 gallons.

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
.40	.30	.30	.30	Tannic, tech, 300 lb bbls...lb.	.30	.40	.40	.30
.38	.34½	.37	.29½	Tartaric, USP, crys, powd, 300 lb. bbls.....lb.	.37	.38	.38	.37
.85	.85	.85	.85	Tobias, 250 lb bbls .....lb.	.....	.85	.85	.85
2.75	2.75	2.75	2.00	Trichloroacetic bottles.....lb.	.....	2.75	2.75	2.75
2.00	2.00	2.00	2.00	Kegs.....lb.	.....	2.00	2.00	2.00
1.25	1.00	1.00	1.00	Tungstic, bbls.....lb.	1.00	1.25	1.25	1.00
.55	.43	.45	.45	Albumen, blood, 225 lb bbls..lb.	.43	.47	.47	.43
.84	.78	.95	.80	Egg, edible.....lb.	.76	.81	.75	.70
.80	.70	.92	.77	Technical, 200 lb cases ..lb.	.70	.75	.80	.70
.65	.60	.60	.60	Vegetable, edible.....lb.	.60	.65	.65	.60
.55	.50	.50	.50	Technical.....lb.	.50	.55	.55	.50
				Alcohol				
.20	.18¼	.20	.19	Alcohol Butyl, Normal, 50 gal drs c-l wks.....lb.	.....	.1775	.17¾	.17¾
.19¼	.18¼	.20¼	.19¼	Drums, 1-c-1 wks.....lb.	.....	.1825	.18¼	.18¼
.19	.17¼	.19¼	.18½	Tank cars wks.....lb.	.....	.1725	.17¼	.17¼
2.25	1.75	.....	.....	Amyl (from pentane) drs c-l wks.....gal.	.....	1.67	1.67	1.67
1.80	1.70	1.70	1.70	Diacetone, 50 gal drs del..gal.	1.70	1.80	1.80	1.70
3.70	2.65	3.70	3.70	Ethyl, USP, 190 pf, 50 gal bbls.....gal.	.....	2.69½	2.69½	2.69½
.55	.50	.50	.50	Anhydrous, drums.....gal.	.....	.71	.71	.71
.52	.48½	.52	.37½	Completely denatured, No. 1, 190 pf, 50 gal drs drums extra.....gal.	.....	.49	.49	.49
.50	.43	.50	.29	No. 5, 188 pf, 50 gal drs. drums extra.....gal.	.....	.48	.48	.48
.46	.41	.46	.25	Tank, cars.....gal.	.....	.46	.46	.46
1.25	1.00	1.00	1.00	Isopropyl, ref, gal drs.....gal.	1.00	1.25	1.25	1.00
1.00	1.00	1.00	1.00	Propyl Normal, 50 gal dr..gal.	.....	1.00	1.00	1.00
.82	.80	.80	.80	Aldehyde Ammonia, 100 gal dr lb.	.80	.82	.82	.80
.65	.65	.65	.65	Alpha-Naphthol, crude, 300 lb bbls.....lb.	.....	.65	.65	.65
.37	.35	.35	.35	Alpha-Naphthylamine, 350 lb bbls.....lb.	.35	.37	.37	.35
3.30	3.25	3.25	3.15	Alum Ammonia, lump, 400 lb bbls, 1c-1 wks.....100 lb.	3.25	3.30	3.30	3.25
5.50	5.25	5.25	5.25	Chrome, 500 lb casks, wks .....100 lb.	5.25	5.50	5.50	5.25
3.20	3.10	3.50	3.10	Potash, lump, 400 lb casks wks.....100 lb.	3.10	3.20	3.20	3.10
5.50	5.25	5.25	5.25	Chrome, 500 lb casks wks .....100 lb.	5.25	5.50	5.50	5.25
3.75	3.75	3.75	3.75	Soda, ground, 400 lb bbls wks.....100 lb.	.....	3.75	3.75	3.75
26.00	24.30	27.00	26.00	Aluminum Metal, c-1 NY.100 lb.	.....	24.30	24.30	24.30
.40	.35	.35	.35	Chloride Anhydrous, 275 lb drums.....lb.	.35	.40	.40	.35
.18	.17	.17	.17	Hydrate, 96%, light, 90 lb bbls.....lb.	.17	.18	.18	.17
.24	.18	.23	.23	Stearate, 100 lb bbls.....lb.	.25	.26	.26	.25
1.75	1.75	1.75	1.75	Sulfate, Iron, free, bags c-l wks.....100 lb.	1.95	2.05	2.05	1.95
1.40	1.40	1.40	1.35	Coml, bags c-l wks..100 lb.	.....	1.40	1.40	1.40
1.15	1.15	1.15	1.15	Aminoazobenzene, 110 lb kegs lb.	.....	1.15	1.15	1.15
				Ammonium				
.14	.13½	.13½	.10	Ammonia, anhyd, 100 lb cyl..lb.	.14	.14	.14	.14
.03	.03	.03	.02½	Water, 26°, 800 lb dr del...lb.	.....	.03¼	.03¼	.03¼
				Bicarbonate, bbls., spot 100 lb.	6.00	6.50	6.50	6.00
.22	.21	.21	.21	Bifluoride, 300 lb bbls.....lb.	.21	.22	.22	.21
.09	.08¼	.08¼	.08¼	Carbonate, tech, 500 lb cs..lb.	.08¼	.09	.09	.08¼
5.15	4.45	5.05	4.85	Chloride, white, 100 lb. bbls wks.....100 lb.	4.45	5.15	5.15	4.45
5.75	5.25	.07	.05¼	Gray, 250 lb bbls wks....lb.	5.25	5.75	5.75	5.25
.11½	.11	.11	.11	Lump, 500 lb cks spot...lb.	.11	.11¼	.11½	.11
.16	.15	.15	.15	Lactate, 500 lb bbls.....lb.	.15	.16	.16	.15
.10	.06	.06	.06	Nitrate, tech, casks.....lb.	.06	.10	.10	.06
.38	.27½	.27½	.27½	Persulfate, 112 lb kegs.....lb.	.27½	.30	.30	.27½
.18	.18	.18	.18	Phosphate, tech, powd, 325 lb bbls.....lb.	.....	.18	.18	.18
2.90	2.20	2.30	2.55	Sulfate, bulk c-1.....100 lb.	2.35	2.40	2.40	2.35
3.00	2.50	2.55	2.35	Southern points.....100 lb.	.....	2.45	2.45	2.45
60.85	60.85	59.70	56.85	Nitrate, 26% nitrogen 31.6% ammonia imported bags.....ton	.....	60.85	60.85	60.85
.60	.55	.55	.55	Sulfocyanide, kegs.....lb.	.55	.60	.60	.55
2.25	1.72	2.25	1.90	Amyl Acetate, (from pentane) drs.....gal.	1.60	1.70	1.70	1.60
.....	.....	.....	.....	Tech., drs.....gal.	1.60	1.70	1.70	1.60
				Alcohol, see Fusel Oil.....				
				Furoate, 1 lb tins.....lb.		5.00		
.16½	.15¼	.15¾	.15	Aniline Oil, 960 lb drs.....lb.	.15¼	.16½	.16½	.15¼
.48	.41	.41	.41	Annatto, fine.....lb.	.41	.48	.48	.41
1.00	.90	.90	.90	Anthraquinone, sublimed, 125 lb bbls.....lb.	.90	1.00	1.00	.90
.12	.09½	.11½	.14	Antimony, metal slabs, ton lots .....lb.	.....	.09½	.09½	.09½
.12	.10	.15½	.14	Needle, powd, 100 lb cs....lb.	.....	.10	.10	.10
.18	.17	.17	.17	Chloride, soln (butter of) cbys.....lb.	.17	.18	.18	.17
.12	.09¾	.16¼	.16½	Oxide, 500 lb bbls.....lb.	.....	.09¾	.09¾	.09¾
.....	.....	.28	.25½	Salt, 66%, tins.....lb.	.....	.....		
.20	.16	.20	.16	Sulfuret, golden, bbls.....lb.	.16	.20	.20	.16
.42	.38	.42	.37½	Vermilion, bbls.....lb.	.38	.42	.42	.38
.19	.17	.18	.18	Archil, conc, 600 lb bbls.....lb.	.17	.19	.19	.17
.14	.12	.12	.12	Double, 600 lb bbls.....lb.	.12	.14	.14	.12
.16	.15	.16	.14	Triple, 600 lb bbls.....lb.	.15	.16	.16	.15
.08	.08	.15	.12½	Argols, 80%, casks.....lb.	.....	.08	.08	.08
.16	.15	.08	.03	Coude, 30%, casks.....lb.	.15	.16	.16	.15
.11	.10½	.10½	.10½	Arsenic, Red, 224 lb kegs, cs..lb.	.10½	.11	.11	.10½
.04	.03¾	.04	.03¾	White, 112 lb kegs.....lb.	.04	.04¼	.04¼	.04
14.75	14.75	14.75	14.75	Asbestine, c-1 wks.....ton	.....	14.75	14.75	14.75

R. W. Greeff & Co., Inc.

64 Water Street, New York City

Manufacturers Agents :: Importers and Exporters

Formic Acid 90%

Sodium Sulphide

Carbon Black

Lamp Black

Methyl Ethyl Ketone

Acetone

Agents For

FABRIEK VAN CHEMISCHE PRODUCTEN

TITANIUM PIGMENT CO.

TEXAS CARBON INDUSTRIES, INC.

M. H. LUMMERZHEIM & CIE

NORWICH CHEMICAL CO.

ANTIPYRINE
AMIDOPYRINE
GUAIACOL CARBONATE

RESORCIN U. S. P.
RESORCIN TECH.
DIMETHYL SULPHATE
SODA SULPHITE ANHYDROUS
PYRIDINE C. P.
PYRIDINE TECH.

RHODOL (Metol)
HYDROQUINONE
QUINONE
GLYCIN
SACCHARIN SOL. & INSOL.

RHODIA CHEMICAL COMPANY

21 Spruce St., New York, N. Y.

Works: New Brunswick, N. J. **Branch Office: 180 N. Wacker Drive, Chicago, Ill.**

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Jan. 1929 $1.028

Compared with the corresponding date in 1927, November saw a larger proportionate decline in inventories than any month since July, when they decreased 25.6%. Production of ethyl alcohol in November by members of the Industrial Alcohol Institute, amounted to 9,541,448 gallons, an increase of approximately 11.8% over the 8,529,518 gallons produced in November, 1927, and comparing with 9,837,982 gallons in October, 1928.

Ammonia — As of February 4, anhydrous prices were advanced ½c lb. over the entire schedule thus indicating the firm position of the market which could demand a premium from those who refused to anticipate their requirements and contract for the year. Aqua on the other hand, continues firm and quite settled with most of the business already allotted.

Ammonium Chloride — Demand has not been quite so good during the past month as it had been. However, it is pointed out that there is a seasonal trend in consumption with August through December being the season of greatest volume. The market is very firm on both gray and white, and imports on the white especially, are constantly decreasing.

Ammonium Sulfate — Continued inactivity has characterized this market. Exports have continued to decline, according to the Department of Commerce. A total of 89,093 tons for the first eleven months of 1928 represents a marked falling off in volume from the same period of 1927 which showed exports of 132,024 tons.

Barium Chloride — Retains its firm position and has shown no particular change during the past month, which has seen the volume of business well maintained. Domestic producers are doing practically all of the business.

Benzene — Volume of shipments is reported to have declined during the past month as compared with November and December. In spite of the fact that shipments have not been up to the records of those two months, the market position is said to be very strong, with prices well maintained throughout the market.

Bleaching Powder — Exports of bleaching powder amounted to 20,866,782 pounds during the first eleven months of 1928, which compares with 15,932,777 pounds for the similar period of 1927. For the first ten months, exports exceeded entire 1927 exports, and for the entire year the estimated gain over 1927 is nearly $70,000 or about 22 per cent. Of this amount, Canada took 82 per cent. and Cuba 12 per cent. The market here is normal and unchanged.

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
				Barium			
57.00	47.00	47.50	47.50	Barium, Carbonate, 200 lb bags wks....ton	57.00	58.00	57.00
.12½	.12	.12	.12	Chlorate, 112 lb kegs NY..lb.	.12	.12½	.12
65.00	54.00	65.00	57.50	Chloride, 800 lb bbl wks...ton	63.00	68.00	68.00	63.00
.13½	.13	.13	.13	Dioxide, 88%, 690 lb drs...lb.	.13	.13½	.13½	.13
.04½	.04½	.04½	.04½	Hydrate, 500 lb bbls.....lb.	.04	.04½	.04½	.04½
.08	.07½	.07½	.07½	Nitrate, 700 lb casks.....lb.	.07½	.08	.08	.07½
24.00	23.00	23.00	23.00	Barytes, Floated, 350 lb bbls wks....ton	23.00	24.00	24.00	23.00
8.00	5.00	.....	.....	Bauxite, bulk, mines.....ton	5.00	8.00	8.00	5.00
.38	.36	.40	.37	Beeswax, Yellow, crude bags..lb.	.36	.37	.37	.36
.43	.41	.46	.38	Refined, cases.....lb.	.41	.42	.42	.41
.58	.56	.58	.56	White, cases.....lb.	.56	.58	.58	.56
.70	.65	.65	.65	Benzaldehyde, technical, 945 lb drums wks.....lb.	.65	.70	.70	.65
				Benzene			
.23	.21	.23	.21	Benzene, 90%, Commercial, 8000 gal tanks wks.....gal.	.....	.23	.23	.23
.23	.21	.23	.21	CP, tanks works.....gal.	.....	.23	.23	.23
.74	.70	.70	.70	Benzidine Base, dry, 250 lb bbls.....lb.	.70	.74	.74	.70
1.00	1.00	1.00	1.00	Benzoyl, Chloride, 500 lb drs.lb.	.....	1.00	1.00	1.00
.25	.25	.....	.....	Benzyl, Chloride, tech drs....lb.	.....	.25	.25	.25
.26	.24	.24	.24	Beta-Naphthol, 250 lb bbl wk.lb.	.24	.26	.26	.24
1.35	1.35	1.35	1.35	Naphthylamine, sublimed, 200 lb bbls.....lb.	.....	1.35	1.35	1.35
.65	.63	.63	.63	Tech, 200 lb bbls.....lb.	.63	.65	.65	.63
90.00	80.00	80.00	80.00	Blanc Fixe, 400 lb bbls wks..ton	80.00	90.00	90.00	80.00
				Bleaching Powder			
2.25	2.25	2.25	2.00	Bleaching Powder, 300 lb drs c-1 wks contract.....100 lb.	.....	2.25	2.25	2.25
2.00	2.00	2.25	2.00	700 lb drs c-1 wks contract .....100 lb.	.....	4.00	4.00	4.00
5.25	4.65	3.75	4.75	Blood, Dried, fob, NY.....Unit	.....	4.60	4.60	4.60
5.35	4.75	.....	.....	Chicago.....Unit	.....	4.85	4.85	4.85
5.05	4.50	.....	.....	S. American shipt.....Unit	.....	4.70	4.70	4.70
.35	.31	.30	.28	Blues, Bronze Chinese Milori Prussian Soluble.....lb.	.32	.34	.34	.32
30.00	29.00	38.00	29.00	Bone, raw, Chicago.....ton	29.00	30.00	30.00	29.00
.07	.06	.06	.06	Bone, Ash, 100 lb kegs.....lb.	.06	.07	.07	.06
.08½	.08½	.08¼	.08¼	Black, 200 lb bbls.....lb.	.....	.08½	.08½	.08½
37.00	31.00	30.00	28.00	Meal, 3% & 50%, Imp....ton	.....	30.00	30.00	30.00
.05	..2½	.04½	.04½	Borax, crys, 500 lb bbls.....lb.	.02½	.03½	.03½	.02½
.12	.10½	.11	.11	Bordeaux, Mixture, 16% pwd..lb.	.01½	.12	.12	.10½
.10	.08	.08	.08	Paste, bbls.....lb.	.08	.10	.10	.08
28.00	26.00	28.00	26.00	Brazilwood, sticks, shpmt....lb.	26.00	28.00	28.00	26.00
1.20	.60	.60	.60	Bronze, Aluminum, powd blk.lb.	.60	1.20	1.20	.60
1.25	.55	.55	.55	Gold bulk.....lb.	.55	1.25	1.25	.55
1.60	1.40	1.60	1.42	Butyl, Acetate, normal drs 1c-1 wks.....gal.	1.40	1.45	1.45	1.40
1.55	1.35	1.55	1.42	Tank, drs wks.....gal.	.....	1.35	1.35	1.35
1.05	1.00	1.00	1.00	Secondary, 50 gal drs.....gal.	1.00	1.05	1.05	1.00
.70	.70	.70	.70	Aldehyde, 50 gal drs wks...lb.	.....	.70	.70	.70
				Carbitol (see Diethylene Glycol Mono Butyl Ether).....	.....	.....	.....	.....
				Cellosolve (see Ethylene glycol mono butyl ether).....				
				Furoate, 1 lb tins.....lb.	.....	5.00		
.36	.34	.34	.34	Propionate, drs.....lb.	.34	.36	.36	.34
.60	.60	.60	.60	Stearate, 50 gal drs.....lb.	.....	.60	.60	.60
.60	.57	.57	.57	Tartrate, drs.....lb.	.57	.60	.60	.57
2.00	1.35	1.50	1.35	Cadmium, Sulfide, boxes.....lb.	1.35	2.00	2.00	1.35
				Calcium			
4.50	3.50	3.50	3.50	Calcium, Acetate, 150 lb bags c-1.....100 lb.	.....	4.50	4.50	4.50
.09	.06	.07½	.07½	Arsenate, 100 lb bbls c-1 wks.....lb.	.07	.09	.09	.07
.06	.05	.05	.05	Carbide, drs.....lb.	.05	.06	.06	.05
1.00	1.00	1.00	1.00	Carbonate, tech, 100 lb bags c-1.....lb.	1.00	1.00	1.00	1.00
27.00	25.00	27.00	27.00	Chloride, Flake, 375 lb drs c-1 wks.....ton	.....	25.00	25.00	25.00
23.00	20.00	21.00	21.00	Solid, 650 lb drs c-1 fob wks .....ton	20.00	20.00	20.00	20.00
52.00	52.00	52.00	52.00	Nitrate, 220 lb bbls c-1 NY.ton	.....	52.00	52.00	52.00
.....	.....	.....	.....	Peroxide, 100 lb. drs.....lb.	.....	1.25	1.25	1.25
.08	.07	.09	.09	Phosphate, tech, 450 lb bbls lb.	.08	.08½	.08	.07
				Stearate, 100 lb bbls.....lb.	.25	.26		
.18	.18	.....	.....	Camwood, Bark, ground bbls..lb.	.....	.18	.18	.18
.28	.22	.33	.33	Candelilla Wax, bags.....lb.	.....	.22	.22	.22
				Carbitol, (See Diethylene Gycol Mono Methyl Ether).....	.....	.....	.....	.....
.15	.08	.08	.08	Carbon, Decolorizing, 40 lb bags c-1.....lb.	.08	.15	.15	.08
.12	.12	.12	.12	Black, 100-300 lb cases 1c-1 NY.....lb.	.....	.12	.12	.12
.06	.05½	.05½	.05½	Bisulfide, 500 lb drs 1c-1 NY.....lb.	.05½	.06	.06	.05½
.06	.06	.06	.06	Dioxide, Liq. 20-25 lb cyl...lb.	.....	.06	.06	.06
.07½	07	.07	.07	Tetrachloride, 1400 lb drs delivered.....lb.	.06½	.07½	.07½	.06½
.58	.45	.50	.50	Carnauba Wax, Flor, bags....lb.	.42	.43	.43	.42
.60	.40	.90	.54	No. 1 Yellow, bags.....lb.	.....	.40	.40	.40
.38	.34	.37	.24	No. 2 N Country, bags.....lb.	.....	.32	.32	.32
.56	.38	.68	.48	No. 2 Regular, bags.....lb.	.....	.36	.36	.36
.32	.25	.....	.....	No. 3 N. C.....lb.	.....	.25	.25	.25
.32	25½	.....	.....	No. 3 Chalky.....lb.	.....	.25	.25	.25
.18½	.14½	.18½	.15½	Casein, Standard, ground.....lb.	.15½	.16	.16	.15½

Acetic Acid

MANUFACTURED
BY

KEYSTONE WOOD CHEMICAL
& LUMBER CORP.

BARCLAY CHEMICAL CO.

TIONESTA VALLEY
CHEMICAL CO.

ALL GRADES
DELIVERIES IN
CARBOYS, BARRELS, TANK-TRUCKS
TANK CARS

Olean Sales Corporation

7-11 GETTY AVENUE
PATERSON, N. J.

OSACO

50 BLANCHARD ST.
LAWRENCE, MASS.

CHEMICAL
E.C.KLIPSTEIN
AND SONS CO.
MANUFACTURERS

Aluminum Chloride Anhydrous

Dinitrophenol **Dyestuffs**

Anthraquinone

Beta Methyl Anthraquinone

Sulphur Black **Aluminum Chloride**

Highest Purity

Prompt Delivery ***Attractive Prices***

Sales Offices: 60 Park Place, Newark, N. J.

E. C. Klipstein & Sons Co.

South Charleston
West Virginia

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Jan. 1929 $1.028

Butyl Acetate — Is unchanged and likely to remain so until some definite results of proposed tariff revision are heard from later in the year.

Calcium Acetate — Producers report that considerable progress has been made in catching up with demand and the market remains firm with supplies still limited. Production statistics for first eleven months of 1928 show that total output during that period amounted to 117,662,158 pounds, contrasted with 143,841,266 pounds in the same time a year ago. Shipments in the same eleven months of 1928 were 131,414,161 pounds, whereas a year ago they were 143,862,457 pounds. The available stocks at the end of the eleven months period in 1928 were 139,989,580 pounds, compared with 223,286,825 pounds in the year before. Whereas as high as 1,113 wood plants had suspended operations as late as September, 1928, there had been a steady gain in the rate of operation of such plants until only 400 were idle during the month of November. Exports for the first eleven months of 1928 amounted to 11,148,580 pounds, as compared with 9,555,619 pounds for the same period of 1927.

Calcium Chloride — Continues about normal for this season of the year although the movement into the ice industry seems bound to diminish eventually. The quantity of calcium chloride used by the ice industry for making brine as reported by the Bureau of the Census increased six per cent. or 1,171,000 pounds in 1927 as compared with 1925. During the same period the quantity of sodium chloride used in this industry declined nearly 1,070,000 pounds or about 1.4 per cent. The amounts used were as follows: Calcium chloride, 1927, 20,398,000 pounds; 1925, 19,216,800 pounds; sodium chloride in 1927, 73,697,000 pounds, and in 1925 74,766,300 pounds.

Carnauba Wax — In common with other waxes, has been in rather low demand during the past month so that all grades have declined in price. Flora is now at 42c @ 43c lb.; No. 1 yellow at 40c @ 41c lb.; No. 2 N. C. at 32c lb.; No. 2 regular at 36c lb.; No. 3 N. C. at 25c lb.; and No. 3 chalky at 26c lb. A complete discussion of the waxes of industry will be found elsewhere in these pages.

Casein — Has advanced 1c lb. in price during the past month and is now quoted at 15½c @ 16c lb. This may be almost wholly attributed to the agitation of buyers over the hearings on proposed tariff revision, for it is the general opinion that only about ¼c lb. increase should have resulted from conditions normally existent within the market. But buying

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
				Cellosolve (see Ethylene glycol mono ethyl ether)			
				Acetate (see Ethylene glycol mono ethyl ether acetate)			
.30	.26	.34	.26	Celluloid, Scraps, Ivory cs....lb.	.26	.30	.30	.26
.20	.18	.18	.18	Shell, cases.....lb.	.18	.20	.20	.18
.32	.30	.34	.26	Transparent, cases.....lb.	.30	.32	.32	.30
1.40	1.40	1.40	1.40	Cellulose, Acetate, 50 lb kegs .lb.	.....	1.40	1.40	1.40
.03¾	.03	.03	.03	Chalk, dropped, 175 lb bbls...lb.	.03	.03¾	.03¾	.03
.04¼	.04¼	.02¼	.02½	Precip, heavy, 560 lb cks...lb.	.....	.04½	.04½	.04½
.03½	.02¼	.04½	.04½	Light, 250 lb casks.....lb.	.02½	.03½	.03½	.02¼
.19	.18	.18	.18	Charcoal, Hardwood, lump, bulk wks.....bu.	.18	.19	.19	.18
.06½	.06	.06	.06	Willow, powd, 100 lb bbl wks.....lb.	.06	.06½	.06½	.06
.05	.04	.04	.04	Wood, powd, 100 lb bbls...lb.	.04	.05	.05	.04
.03	.02	.03	.02½	Chestnut, clarified bbls wks,..lb.	.02½	.03	.02	.03½
.02	.01½	.02	.01½	25% tks wks.....lb.	.01½	.02	.02	.01½
.04 4/5	.04 4/5	.05½	.05½	Powd, 60%, 100 lb bgs wks.lb.	.....	.04 4/5	.04 4/5	.04 4/5
.06	.05½	.06½	.06½	Powd, decolorized bgs wks..lb.	.05½	.06	.06	.05½
9.00	8.00	8.00	8.00	China Clay, lump, blk mines.ton	8.00	9.00	9.00	8.00
.02	.01½	.01½	.01½	Powdered, bbls.....lb.	.01½	.02	.02	.01½
12.00	10.00	10.00	10.00	Pulverized, bbls wks.....ton	10.00	12.00	12.00	10.00
25.00	15.00	15.00	15.00	Imported, lump, bulk.....ton	15.00	25.00	25.00	15.00
.03½	.03	.03	.03	Powdered, bbls.....lb.	.03	.03½	.03½	.03
				Chlorine			
.09	.08	.08	.08	Chlorine, cyls 1c-1 wks contract .....lb.	.08	.09	.09	.08
.03½	.03½	.05½	.04	Liq tank or multi-car lot cyls wks contract.....lb.	.....	.03½	.03½	.03½
.07	.07	.07	.07	Chlorobenzene, Mono, 100 lb. drs 1c-1 wks.....lb.	.....	.07	.07	.07
.22	.20	.20	.20	Chloroform, tech, 1000 lb drs..lb.	.20	.22	.22	.20
1.35	1.00	1.00	1.00	Chloropicrin, comml cyls.....lb.	1.00	1.35	1.35	1.00
.29	.26	.27	.26	Chrome, Green, CP.....lb.	.26	.29	.29	.26
.11	.06½	.06½	.06½	Commercial.....lb.	.06½	.11	.11	.06½
.17	.15½	.17½	.16½	Yellow.....lb.	.15	.16	.16	.15
.05¾	.04¾	.05	.04½	Chromium, Acetate, 8% Chrome bbls.....lb.	.04¼	.05½	.05½	.04¾
.05½	.05½	.05½	.05½	20° soln, 400 lb bbls.....lb.	.....	.05½	.05½	.05½
.28	.27	.27	.27	Fluoride, powd, 400 lb bbl..lb.	.27	.28	.28	.27
.35½	.34½	.34½	.34½	Oxide, green, bbls.....lb.	.34½	.35½	.35½	.34½
9.50	9.00	9.50	9.00	Coal tar, bbls.....bbl	9.00	9.50	9.50	9.00
2.22	2.10	2.10	2.10	Cobalt Oxide, black, bags....lb.	2.10	2.22	2.22	2.10
.87	.84	.92	.77	Cochineal, gray or black bag..lb.	.84	.87	.87	.84
.86	.86	.92	.77	Teneriffe silver, bags.....lb.	.....	.86	.86	.86
				Copper			
17.00	12.90	13.57½	12.90	Copper, metal, electrol...100 lb.	.....	17.00	17.00	17.00
.17¼	.16	.16¾	.06¼	Carbonate, 400 lb bbls.....lb.	.17¼	.18	.18	.17¼
.28	.28	.28	.28	Chloride, 250 lb bbls.....lb.	.....	.28	.28	.28
.50	.48	.48	.48	Cyanide, 100 lb drs.....lb.	.48	.50	.50	.48
.17	.16½	.16½	.16½	Oxide, red, 100 lb bbls.....lb.	.16½	.17	.17	.16½
.19	.18	.18	.17	Sub-acetate verdigris, 400 lb bbls.....lb.	.18	.19	.19	.18
5.50	5.05	5.00	4.75	Sulfate, bbls c-1 wks...100 lb.	.....	5.65	5.65	5.65
14.00	13.00	17.00	13.00	Copperas, crys and sugar bulk c-1 wks.....ton	13.00	14.00	14.00	13.00
1.35	1.25	1.25	1.25	Sugar, 100 lb bbls.....100 lb.	1.25	1.35	1.35	1.25
.42	.40	.40	.40	Cotton, Soluble, wet, 100 lb bbls.....lb.	.40	.42	.42	.40
.....	.....	42.00	20.00	Cottonseed, S. E. bulk c-1...ton	.....	.....	.....	.....
.....	.....	42.00	20.00	Meal S. E. bulk.....ton	.....	.....	.....	.....
38.00	36.00	35.00	21.50	7% Amm., bags mills...*ton	37.50	38.00	38.00	37.50
.27½	.26	.27	.22	Cream Tartar, USP, 300 lb. bbls.....lb.	.26	.27½	.27½	.26
.42	.40	.40	.40	Creosote, USP, 42 lb cbys....lb.	.40	.42	.42	.40
.19	.17	.20	.20	Oil, Natural, 50 gal drs....gal.	.17	.19	.19	.17
.23	.21	.25	.25	10-15% tar acid.....gal.	.21	.23	.23	.21
.28	.25	.....	.....	25-30% tar acid.....gal.	.25	.28	.28	.25
.20	.17½	.17½	.17½	Cresol, USP, drums.....lb.	.17½	.20	.20	.17½
.17	.16	.17	.16	Crotonaldehyde, 50 gal dr....lb.	.32	.36		
.18½	.18½	.18½	.15	Cudbear, English.....lb.	.16	.17	.17	.16
.07	.06	.05	.05½	Cutch, Rangoon, 100 lb bales..lb.	.....	.18½	.18½	.18½
1.75	1.67½	1.82½	1.67½	Borneo, Solid, 100 lb bale..lb.	.06	.07	.07	.06
5.12	3.77	3.92	3.77	Cyanamide, bulk c-1 wks Amm. .....lb.	.....	1.70	1.70	1.70
5.07	3.72	3.87	3.72	Dextrin, corn, 140 lb bags.100 lb.	4.62	4.82	4.82	4.62
.09	.08	.08½	.08½	White, 130 lb bags.....100 lb.	4.57	4.77	4.77	4.57
.09	.08	.08½	.08½	Potato, Yellow, 220 lb bgs..lb.	.08	.09	.09	.08
.08¼	.08	.08¼	.08	White, 220 lb bags 1c-1....lb.	.08	.09	.09	.08
.....	.....	3.80	3.80	Tapioca, 200 lb bags 1c-1..lb.	.08	.08¼	.08¼	.08
3.80	3.80	2.95	2.85	Diaminophenol, 100 lb kegs..lb.	.....	.....		
2.90	2.85	3.25	3.25	Diamylphthalate, drs wks...gal.	.....	3.80	3.80	3.80
.28	.26½	.31½	.29½	Dianisidine, 100 lb kegs.....lb.	2.85	2.90	2.90	2.85
.31½	.29½	.55	.55	Dibutylphthalate, wks.....lb.	.....	.26½	.26½	.26½
.....	.....	.....	.....	Dibutyltartrate, 50 gal drs....lb.	.29½	.31½	.31½	.29½
.65	.55	.23	.23	Dichloroethylether, 50 gal drs lb.	.10	.13	.15	.13
.25	.23	2.15	2.15	Dichloromethane, drs wks....lb.	.55	.65	.65	.55
2.15	2.15	1.85	1.85	Diethylamine, 400 lb drs.....lb.	.23	.25	.25	.23
2.00	1.85	.55	.55	Diethylcarbonate, drs .....gal.	.....	2.15	2.15	2.15
.60	.55.	20	.20	Diethylaniline, 850 lb drs.....lb.	1.85	2.00	2.00	1.85
.15	.10	.....	.....	Diethyleneglycol, drs.....lb.	.10	.13	.60	.55
.35	.25	.....	.....	Mono ethyl ether, drs....lb.	.13	.15		
.....	.....	.....	.....	Mono butyl ether, drs....lb.	.25	.28		
.....	.....	.....	.....	Mono methyl ether, 50 gal. dr.....lb.	.21	.22	.15	.13
.67	.64	.64	.64	Diethylene oxide, 50 gal dr....lb.	.....	.50	.35	.25
.26	.24	.25	.25	Diethylorthotoluidin, drs....lb.	.64	.67	.67	.64
.35	.30	.30	.30	Diethyl phthalate, 1000 lb drums.....lb.	.24	.26	.26	.24
2.62	2.62	2.60	2.60	Diethylsulfate, technical, 50 gal drums.....lb.	.30	.35	.35	.30
.32	.30	.32	.30	Dimethylamine, 400 lb drs...lb.	.....	2.62	2.62	2.62
				Dimethylaniline, 340 lb drs...lb.	.30	.32	.32	.30

Acetic Acid

NIACET PRODUCTS

Acetaldehyde
Acetaldol
Acetic Acid
Crotonaldehyde
Paraldehyde
Paraldol
Niatan

OUR U. S. P. GLACIAL ACETIC ACID is now available in 50 pound aluminum containers, packed two in a crate.

This is a SUPERIOR GRADE suitable for U. S. P. edible and fine chemical uses requiring an exceptionaly pure material.

NIACET CHEMICALS CORPORATION

SALES OFFICE AND PLANT

Niagara Falls
NEW YORK

KESSCO PRODUCTS

SOLVENTS AND PLASTICIZERS

for the Lacquer Industry

Methyl Acetate
Ethyl Acetate
Isopropyl Acetate
Butyl Acetate, Nor. and Sec.
Amyl Acetate

Butyl Propionate,
Amyl Propionate, Nor. and Sec.
Butyl Butyrate
Ethyl Lactate

Butyl Alcohol Sec.
Amyl Alcohol
Refined Fusel Oil
Dimethyl Phthalate
Diethyl Phthalate
Diamyl Phthalate
Dibutyl Phthalate
Dibutyl Tartrate
Triacetine
Special Solvents and Plasticizers

Warehouse stocks carried at all principal consuming points

KESSLER CHEMICAL COMPANY
ORANGE, N. J.

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Jan. 1929 $1.028

has been in very heavy volume with everybody apparently trying to anticipate requirements for a long time ahead, in an effort to be well stocked, if and when the tariff is increased. Many factors have attempted to discourage this buying in excess of requirements for the reaction is bound to be felt by buyer and seller alike in the future.

Chlorine — Has shown decided improvement during the past month so that the market is now in very satisfactory condition and firm at all points. Production of liquid chlorine in the United States, not including that made and consumed in the pulp and paper industries, totaled 143,205 tons in 1927, according to the Bureau of the Census. This total compares with 83,163 tons reported in the 1925 census. It has been unofficially estimated that the potential production is 190,000 tons. Production of liquid chlorine for sale amounted to 188,468,533 lbs. in 1927, compared with 104,950,186 lbs. in 1925. Exports of chlorine in the first ten months of 1928 were valued at $197,114. Coincident with this there was a gain of about 22 per cent. in the value of exports of bleaching powder. Canada was the foremost purchaser in both instances, taking 82 per cent. of the bleaching powder and 74 per cent. of the chlorine exported. The other principal foreign purchasers of chlorine are Colombia, China, Cuba, the Philippines, Java, Argentine, Ecuador, Brazil and Chile. Despite some new uses already found for the surplus production of chlorine, there has been a decline in the market price of about 25 per cent. The problem of disposing of the surplus chlorine resulting from salt electrolysis has been partly met in Italy by producing fused calcium and magnesium chlorides, with an associated decline in imports. In the United States imports of calcium chloride are increasing from 6,514 tons in 1927 to (estimated) 9,133 tons in 1928, notwithstanding a large surplus of raw material.

Copper Sulfate — During the past month the price of copper sulfate was advanced 15c per 100 lbs. to $5.65 per 100 lbs. in carload lots, f. o. b., New York. This followed the last advance in copper to 17c lb. as reported here last month. Producers point out the fact that copper has advanced several itmes since November 5, 1928, which was the date which marked the last advance in price on the sulfate. These advances have totaled about a ¾c lb. advance in the price of copper and finally the producers were forced to meet this increased production cost by an advance in price. Further advances may materialize for it is thought that copper will advance to 18c lb. or

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
.50	.45	.45	.45	Dimethylsulfate, 100 lb drs...lb.	.45	.50	.50	.45
.16½	.15½	.15½	.15	Dinitrobenzene, 400 lb bbls...lb.	.15½	.16½	.16½	.15½
.19	.18	.18	.18	Dinitrochlorine, 300 lb bbl...lb.	.18	.19	.19	.18
.16	.15	.15	.15	Dintrochlorobenzene, 400 lb bbls.....lb.	.15	.16	.16	.15
.34	.32	.32	.32	Dinitronaphthalene, 350 lb bbls .....lb.	.32	.34	.34	.32
.32	.31	.31	.31	Dinitrophenol, 350 lb bbls....lb.	.31	.32	.32	.31
.19	.18	.18	.15	Dinitrotoluene, 300 lb bbls...lb.	18	.19	.19	.18
.90	.48	1.05	.85	Diorthotolyguanidine, 275 lb bbls wks.....lb.	.48	.49	.49	.48
.....	.....	.....	.....	Dioxan (See Diethylene Oxide)	.....	.....	.....	.....
.47	.45	.48	.45	Diphenylamine.....lb.	.45	.47	.47	.45
.72	.40	.....	.....	Diphenylguanidine, 100 lb bbl lb.	.40	.41	.41	.40
.30	.26	.26	.26	Dip Oil, 25%, drums.....lb.	.26	.30	.30	.26
62.00	58.00	49.00	41.00	Divi Divi pods, bgs shipmt..ton	.....	57.00	57.00	57.00
.05½	.05	.04	.04	Extract.....lb.	.05	.05½	.05½	.05
.82	.73	.84	.72	Egg Yolk, 200 lb cases.....lb.	.78	.80	.80	.78
1.75	1.7	2.00	1.75	Epsom Salt, tech, 300 lb bbls c-1 NY.....100 lb.	1.70	1.75	1.75	1.75
.38	.37	.45	.37	Esther, USP, 1880, 50 lb drs..lb.	.37	.38	.38	.37
1.05	.75	.90	.90	Ethyl Acetate, 85% Ester, 110 gal drs.....gal.	1.02	1.05	1.05	1.02
1.25	1.10	1.10	1.03	99% gal drums.....gal.	1.22	1.25	1.25	1.22
.....	.....	.....	.....	Acetoacetate, 50 gal drs...gal.	.65	.68	.68	.65
1.11	1.05	1.05	1.05	Benzylaniline, 300 lb drs...lb.	1.05	1.11	1.11	1.05
.70	.70	.50	.50	Bromide, tech, drums .....lb.	.....	.70	.70	.70
.....	.....	.....	.....	Carbonate, 90%, 50 gal drs gal.	1.85	1.90	1.90	1.85
.22	.22	.22	.22	Chloride, 200 lb. drums....lb.	.....	.22	.22	.22
.....	.....	.....	.....	Chlorocarbonate, 50 gal dr .gal.	.35	.40	.40	.35
.....	.....	.....	.....	Ether, Absolute, 50 gal drs..lb.	.50	.52	.52	.50
				Furoate, 1 lb tins.....lb.	.....	5.00		
3.50	3.50	3.50	3.50	Lactate, drums works.....lb.	.30	.35	.35	.30
.30	.30	.30	.30	Methyl Ketone, 50 gal drs..lb.	.....	.30	.30	.30
.55	.45	.45	.45	Oxalate, drums works.....lb.	.45	.55	.55	.45
.36	.30	.....	.....	Oxybutyrate, 50 gal drs wks.lb.	.30	.36	.36	.30
.70	.70	.70	.70	Ethylene Bromide, 60 lb dr...lb.	.....	.70	.70	.79
.85	.75	.75	.75	Chlorhydrin, 40%, 50 gal drs chloro. cont.....lb.	.75	.85	.85	.75
.11	.07	.15	.11	Dichloride, 50 gal drums...lb.	.07	.10	.10	.07
.40	.25	.30	.30	Glycol, 50 gal drs wks.....lb.	.27	.30	.30	.27
.27	.31	.....	.....	Mono Butyl Ether drs wks.	.27	.31	.27	.31
.20	.24	.....	.....	Mono Ethyl Ether drs wks	.20	.24	.20	.24
.23	.26	.....	.....	Mono Ethyl Ether Acetate dr. wks.....	.23	.26	.23	.26
				Mono Methyl Ether, drs.lb.	.....	1.00		
.65	.62	.62	.62	Ethylidenaniline.....lb.	.62	.65	.65	.62
				Oxide, cyl.....lb.	.....	2.00		
25.00	20.00	20.00	20.00	Feldspar, bulk.....ton	40.00	25.00	25.00	20.00
21.00	15.00	15.00	15.00	Powdered, bulk works.....ton	15.00	.21	21.00	15.00
.09	.07½	.07½	.07½	Ferric Chloride, tech, crystal 475 lb bbls.....lb.	.07½	.09	.09	.07½
5.50&10	4.90&10	5.60	4.15	Fish Scrap, dried, wks.....unit	.....	Nom.	Nom.	Nom.
4.75&50	4.00&50	3.50	4.24	Acid, Bulk 7 & 3½% delivered Norfolk & Balt. basis...unit	.....	Nom.	Nom.	Nom.
1.15	1.10	1.10	.90	Flavine, lemon, 55 lb cases...lb.	1.10	1.15	1.15	1.10
1.15	1.10	1.10	.85	Orange, 70 lb cases.....lb.	1.10	1.15	1.15	1.10
				Flavseed.....lb.	.....	.....		
25.00	25.00	25.00	25.00	Fluorspar, 95%, 220 lb bags...lb.	.....	25.00	25.00	25.00
.....	.....	.....	.....	Ex-dock.....ton	.....	.....	.....	.....
				Formaldehyde				
.....	.....	.....	.....	Formaldehyde, aniline, 100 lb. drums.....lb.	.....	.....	.....	.....
.42	.39	.39	.39	USP, 400 lb bbls 1c-1 wks..lb.	.39	.42	.42	.39
.09	.08½	.11½	.08½	Fossil Flour.....lb.	.....	.09½	.09½	.09½
.04	.02½	.02½	.02½	Fullers Earth, bulk, mines..ton	.02½	.04	.04	.02½
20.00	15.00	15.00	15.00	Imp. powd c-1 bags.....ton	15.00	20.00	20.00	15.00
30.00	25.00	25.00	25.00	Furan, 1 lb tins.....lb.	25.00	30.00	30.00	25.00
.19½	.1 ½	.17½	.17½	Furfural 500 lb drums.....lb.	.....	20.00	.19½	.17½
.....	.....	.....	.....	Furfuramide (tech) 100 lb dr..lb.	.17½	.19½		
.....	.....	.....	.....	Furfuryl Acetate, 1 lb tins....lb.	.....	.30		
.....	.....	.....	.....	Alcohol, 100 lb dr.....lb.	.....	5.00		
.....	.....	.....	.....	Furoic Acid (tech) 100 lb dr...lb.	.....	.50		
1.35	1.35	1.69	1.35	Fusel Oil, 10% impurities ...gal.	.....	1.00		
.05	.04	.04	.04	Fustic, chips.....lb.	.04	1.35	1.35	1.35
.22	.20	.20	.20	Crystals, 100 lb boxes.....lb.	.20	.05	.05	.04
.10	.09	.09	.09	Liquid, 50°, 600 lb bbls....lb.	.09	.22	.22	.20
.23	.20	.20	.20	Solid, 50 lb boxes.....lb.	.20	.10	.10	.09
32.00	30.00	30.00	30.00	Sticks.....ton	30.00	.23	.23	.20
.52	.50	.50	.50	G Salt paste, 360 lb bbls.....lb.	.50	32.00	32.00	30.00
21	.20	.20	.20	Gall Extract.....lb.	.20	.52	.52	.50
.09	.08	.08	.06	Gambier, common 200 lb cs...lb.	.08	.21	.21	.20
.14	.12	.12	.12	25% liquid, 450 lb bbls....lb.	.12	.09	.09	.08
.12	.11	.23	.11	Singapore cubes, 150 lb bg..lb.	.11	.14	.14	.12
.50	.45	.45	.30	Gelatin, tech, 100 lb cases...lb.	.45	.12	.12	.11
3.24	3.14	3.14	3.14	Bags, c-1 NY.....100 lb.	3.14	.50	.50	.45
1.00	.70	1.05	1.05	Glauber's Salt, tech, 250 lb bags c-1 wks.....100 lb.	.70	3.24	3.24	3.14
3.34	3.24	3.24	3.24	Glucose (grape sugar) dry 70-80° bags c-1 NY.....100 lb.	3.24	1.00	1.00	.4 .7
3.14	3.14	3.14	3.14	Tanner's Special, 100 lb bags .....100 lb.	.....	3.34	3.34	3.20
.24	.20	.20	.20	Glue, medium white, bbls ...lb.	.20	3.14	3.14	3.14
.26	.22	.22	.22	Pure white, bbls.....lb.	.22	.24	.24	.20
.19	.15	.29	.22	Glycerin, CP, 550 lb drs.....lb.	.15½	.26	.26	.22
.15	.11¼	.25	.17	Dynamite, 100 lb drs.....lb.	.12	.16	.16	.15½
.10½	.08¼	.....	.....	Saponification, tanks.....lb.	.08¼	.12½	.12½	.12
.09¼	.07¼	.....	.....	Soap Lye, tanks.....lb.	.....	.08¼	.08¼	.08¼
35.00	15.00	15.00	15.00	Graphite, crude, 220 lb bgs...ton	15.00	.07¼	.07½	.07½
.09	.06	.05	.05	Flake, 500 lb bbls.....lb.	.06	35.00	35.00	15.00
				Gums		.09	.09	.06
.04½	.03¾	.03¾	.03¾	Gum Accroides, Red, coarse and fine 140-150 lb bags.....lb.	.03¾	.04½	.04½	.03¾
.06½	.06	.06	.06	Powd, 150 lb bags.....lb.	.06	.06½	.06½	.06

Special

WOOD CREOSOTE OIL
for
Flotation Process of Separating Minerals

WOOD CREOSOTE OIL
for
Wood Preservation

WOOD CREOSOTE OIL
for
Killing Fungus Growths and Weeds

The Cleveland-Cliffs Iron Co.

HOME OFFICE 14TH FLOOR UNION TRUST BUILDING
CLEVELAND, OHIO.

"COLUMBIA BRAND"

Caustic Soda

SOLID—FLAKE
GROUND—LIQUID

Soda Ash

LIGHT—
DENSE

Columbia Chemical Division
Pittsburgh Plate Glass Co., Barberton, Ohio

QUALITY **SERVICE**

Address all Communications to

THE ISAAC WINKLER & BRO. CO.

Sole Agents

FIRST NATIONAL BANK BLDG., CINCINNATI, OHIO

50 BROAD STREET NEW YORK

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Jan. 1929 $1.028

higher. It is further reported that buying for January was below normal as that month generally marks the beginning of the heavy buying season which lasts until summer. Demand is expected, on the whole, to be about the same as last year although spraying with the sulfate is more prevalent throughout the country. Prices on the metal are higher in England than in this country, while about the same range prevails in Germany.

Dextrin — Some revision in price quotations have been made so that quotations are now at $4.62 @ $4.82 per 100 lbs. on corn dextrin, with white at $4.57 @ $4.77 per 100 lbs. This represents a removal of the trade allowance of 30c per 100 lbs. and an increase in price of 15c per 100 lbs. The increase followed upon the upward turn taken by the grain market, and the market seems firm at those prices. It is apparently unaffected by proposed tariff legislation.

Ethyl Acetate — While demand is said to be not quite up to that of the Fall, demand is good and the market is firm affecting conditions in the acetic acid market.

Gums — Although a further increase in the price of Sandarac to 60c @ 62c lb., is the only price change of the month, it is expected that a general increase in price on all gums will soon materialize as a result of efforts of importers to effect some stabilization of prices in this market.

Mercury — During the past month, the market has been inactive and weak, due to lack of demand and excess offerings of domestic material. As a result, prices have declined further so that quotations are now at $120.00 @ $121.00 per flask.

Methanol — Demand continues good and is said to have shown decided improvement over that of the previous month. Synthetic continues to be sold up ahead, but natural is in better supply although without any trace of excess stocks. There seems to be no competition between the two and the market is established upon a firm basis.

Methyl Acetone — Is temporarily in easier position due to some accumulation of stocks. Quotations are at 83c @ 85c gal., although it is reported that there has been a tendency to shade prices in some quarters.

Nitrogenous Material — Trading in this material has been very active and as a result some scarcity has become evident at Southern points. Prices have also advanced so that quotations are now at $4.00 per unit.

Phenol — Producers are working to capacity in an effort to keep up with the demand which has reached greater proportions than anticipated. However, the

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
.20	.18	.18	.18	Yellow, 150-200 lb bags....lb.	18	.20	.20	.18
.40	.35	.40	.35	Animi (Zanzibar) bean & pea 250 lb cases.....lb.	.35	.40	.40	.35
.55	.50	.60	.50	Glassy, 250 lb cases.....lb.	.50	.55	.55	.50
.12	.09	.09	.09	Asphaltum, Barbadoes (Manjak) 200 lb bags.....lb.	.09	.12	.12	.09
.17	.15	.15	.15	Egyptian, 200 lb cases.....lb.	.15	.17	.17	.15
65.00	55.00	55.00	55.00	Gilsonite Selects, 200 lb bags .....ton	58.00	65.00	65.00	58.00
.26	.22½	.26½	.26½	Damar Batavia standard 136, lb cases.....lb.	.25½	.26	.26	.25½
.11	.10½	.10½	.07	Batavia Dust, 160 lb bags.....lb.	.10½	.11	.11	.10½
.17½	.16	.18½	.17½	E Seeds, 136 lb cases.....lb.	.17	.17½	.17½	.17
.14½	.13	.14	.09	F Splinters, 136 lb cases and bags.....lb.	.13	.13½	.13½	.13
.30½	.29½	.34	.33½	Singapore, No 1, 224 lb cases lb.	.30	.30½	.30½	.30
.24	.20	.22½	.21	No. 2, 224 lb cases.....lb.	.23½	.24	.24	.23½
.15	.13½	.14	.11	No. 3, 180 lb bags.....lb.	.13½	.14	.14	.13½
.48	.33	.35	.30	Benzoin Sumatra, U. S. P. 120 lb cases.....lb.	.38	.40	.40	.38
.15	.14	.14	.12	Copal Congo, 112 lb bags, clean opaque.....lb.	.14	.15	.15	.14
.09	.08¾	.08¾	.08¾	Dark, amber.....lb.	.08¾	.09	.09	.08¾
.14	.12½	.12½	.12½	Light, amber.....lb.	.12½	.14	.14	.12½
.36	.35	.35	.35	Water white.....lb.	.35	.36	.36	.35
.65	.58	.....	.....	Mastic.....lb.	.60	.62	.62	.60
.17½	.16	.16	.16	Manila, 180-190 lb baskets Loba A.....lb.	.17	.17½	.17½	.17
.16½	.15	.15	.15	Loba B.....lb.	.16	.16½	.16½	.16
.14	.13	.14½	.13	Loba C.....lb.	.14	.14½	.14½	.14
.19	.16	.16	.16	Pale bold, 224 lb cs.....lb.	.17	.19	.19	.17
.13½	.12	.14	.12	Pale nubs.....lb.	.13	.13½	.13½	.13
.11	.07½	.07½	.07½	East Indies chips, 180 lb bags lb.	.10	.11	.11	.10
.21	.17	.....	.....	Pale bold, 180 lb bags....lb.	.20	.21	.21	.20
.16	.14	.17	.17	Pale nubs.....lb.	.15	.16	.16	.15
.....	.....	.....	.....	Pontianak, 224 lb cases....lb.	.....	.....		
.25½	.22	.29	.25	Pale bold gen No 1.....lb.	.22	.23	.23	.22
.15	.13	.19	.13	Pale gen chips spot.....lb.	.14½	.15	.15	.14½
.14	.13	.14	.13	Elemi, No. 1, 80-85 lb cs...lb.	.13½	.14	.14	.13½
.13½	.13	.13	.12	No. 2, 80-85 lb cases.....lb.	.13	.13½	.13½	.13
.13	.12	.13	.11	No. 3, 80-85 lb cases.....lb.	.12	.13	.13	.12
.57	.50	.67½	.57	Kauri, 224-226 lb cases No. 1 .....lb.	.50	.57	.57	.50
.38	.35	.44½	.38	No. 2 fair pale.....lb.	.35	.38	.38	.35
.12	.10	.14½	.10	Brown Chips, 224-226 lb cases.....lb.	.10	.12	.12	.10
.....	.....	.42	.38	Bush Chips, 224-226 lb	.....	.....		
.40	.38	.....	.....	cases.....lb.	.38	.40	.40	.38
.....	.....	.....	.....	Pale Chips, 224-226 lb cases .....lb.	.24½	.26	.26	.24½
.26	.24½	.31½	.24½	Sandarac, prime quality, 200 lb bags & 300 lb casks...lb.	.60	.62	.62	.60
.60	.26	.27	.25	Helium, 1 lit. bot.....lit.	.....	25.00	.20	.17
.....	.....	.....	.....	Hematine crystals, 400 lb bbls lb.	.17	.20	.11	.17
.20	.17	.12	.12	Paste, 500 bbls.....lb.	.....	.11	.11	.11
.11	.11	.09	.09	Hemlock 25%, 600 lb bbls wks lb.	.03½	.03½	.03½	.03½
.03¾	.03½	.03½	.03½	Bark.....ton	.....	16.00	16.00	16.00
16.00	16.00	16.00	16.00	Hexalene, 50 gal drs wks.....lb.	.....	.60	.60	.60
.60	.60	.60	.45	Hexamethylenetetramine, drs .lb.	.56	.58	.58	.56
.56	.62	.80	.62	Hoof Meal, fob Chicago....unit	.....	4.00	4.00	4.00
4.00	4.00	3.35	2.75	South Amer. to arrive....unit	.....	.....	.....	.....
.....	.....	3.90	3.0	Hydrogen Peroxide, 100 vol, 140 lb cbys.....lb.	.24	.26	.26	.24
.26	.24	.30	.22	Hypernic, 51°, 600 lb bbls....lb.	.12	.15	.15	.12
.15	.12	.12	.12	Indigo Madras, bbls.....lb.	1.28	1.30	1.30	1.28
1.30	1.28	1.28	1.20	20% paste, drums.....lb.	.14	.15	.15	.14
.15	.14	.14	.14	Solid, powder.....lb.	.07½	.08	.08	.07½
.08	.07½	.07½	.07½	Iron Chloride, see Ferric or Ferrous				
.10	.09	.09	.09	Iron Nitrate, kegs.....lb.	.09	.10	.10	.09
3.25	2.50	2.50	2.50	Coml, bbls.....100 lb.	2.50	3.25	3.25	2.50
.12	.10	.10	.10	Oxide, English.....lb.	.10	.12	.12	.10
.03½	.02½	.02½	.02½	Red, Spanish.....lb.	.02½	.03¾	.03¾	.02½
.90	.85	.85	.85	Isopropyl Acetate, 50 gal drs gal.	.85	.90	.90	.85
.20	.17	.29	.17	Japan Wax, 224 lb cases.....lb.	.....	.18	.18	.18
70.00	60.00	60.00	60.00	Kieselguhr, 95 lb bgs NY....ton	60.00	70.00	70.00	60.00
.....	.....	14.00	13.00	Lead Acetate, bbls wks...100 lb.	.....	.....		
13.50	13.00	14.00	13.00	White crystals, 500 lb bbls wks.....100 lb.	13.00	13.50	13.50	13.00
.15	.13	.15½	.13½	Arsenate, drs 1c-1 wks.....lb.	.13	.15	.15	.13
6.25	6.25	7.80	6.20	Dithiofuroate, 100 lb dr....lb.	.....	1.00		
.14	.14	.14	.14	Metal, c-1 NY.....100 lb.	.....	6.10	6.10	6.10
.18	.17½	.17½	.17½	Nitrate, 500 lb bbls wks....lb.	.....	.14	.14	.14
.08¾	.08½	.10½	.08¾	Oleate, bbls.....lb.	.17½	.18	.18	.17½
.09¼	.09½	.11½	.09¼	Oxide Litharge, 500 lb bbls.lb.	.....	.08½	.08½	.08½
.09	.09	.09½	.09	Red, 500 lb bbls wks....lb.	.....	.09½	.09½	.09½
.08¼	.08¼	.09	.08¼	White, 500 lb bbls wks...lb.	.....	.09	.09	.09
4.50	4.50	4.50	4.50	Sulfate, 500 lb bbls wk...lb.	.....	.08¼	.08¼	.08¼
1.05	1.05	1.05	1.05	Lime, ground stone bags.....ton	.....	4.50	4.50	4.50
.17	.15	.15	.15	Live, 325 lb bbls wks...100 lb.	.....	1.05	1.05	1.05
.06½	.06½	.06½	.06½	Lime Salts, see Calcium Salts Lime-Sulfur soln bbls.....gal.	.15	.17	.17	.15
.08½	.08¼	.08¼	.08¼	Lithopone, 400 lb bbls 1c-1 wks .....lb.	.....	.06½	.06½	.06½
.03½	.03	.03	.03	Logwood, 51°, 600 lb bbls.....lb.	.08½	.08½	.08½	.08¼
.12½	.12½	.12	.12	Chips, 150 lb bags.....lb.	.03	.03¼	.03½	.03
27.00	26.00	26.00	26.00	Solid, 50 lb boxes.....lb.	.....	.12½	.12½	.12½
.08	.07½	.07½	.07½	Sticks.....ton	26.00	27.00	27.00	26.00
.30	.30	.30	.30	Lower grades.....lb.	.07½	.08	.08	.07½
50.00	48.00	48.00	48.00	Madder, Dutch.....lb.	.....	.30	.30	.30
				Magnesite, calc, 500 lb bbl...ton	48.00	50.00	50.00	48.00
				Magnesium				
.06½	.06	.06½	.06	Magnesium Carb, tech, 70 lb bags NY.....lb.	.06	.06½	.06½	.06

Oxalic Acid
Chlorate Soda
Phosphorous Compounds

MANUFACTURED BY
OLDBURY ELECTRO - CHEMICAL CO. NIAGARA FALLS, N. Y

Chlorate Potash
Persulphate Ammonia

MANUFACTURED BY
NORTH AMERICAN CHEMICAL CO., BAY CITY, MICH.

JOSEPH TURNER & CO.
19 Cedar St. -:- New York

Church & Dwight, Inc.
Established 1846
80 MAIDEN LANE NEW YORK

Bicarbonate of Soda
Sal Soda
Monohydrate of Soda
Standard Quality

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Jan. 1929 $1.028

situation is just a temporary one and should be relieved within a short time.

Rosins — The price tendency during the past month has been downward and it is now the confident expectation that the low point has been reached. In support of this is pointed out the fact that stocks are short and a heavy demand is anticipated.

Shellac — Has been but little activity during the past month with buying restricted to small spot lots. The Calcutta market has been fairly active since the first of the year owing to an overseas demand, according to the Department of Commerce. Rail arrivals totaled 31,200 packages during December as compared with 34,700 packages during the same month of last year. Stocks are seasonally normal due to heavy shipments during January. November exports from Calcutta totaled 59,000 hundredweight, a large increase in comparison with 39,750 hundredweight for November 1927.

Soda Ash — This is the firmest of all the alkalis and is said to be the firmest soda ash market in at least the last six years. No difficulty is being experienced in getting the 2½c per 100 lb. margin required on spot business, and the volume moving into consuming channels is reported as being very satisfactory over the entire country. The value of the total exports of United States soda ash, $1,025,678 for 10 months of 1928, is nearly equal that for the entire year 1927, $1,141,089. The estimates for 12 months of 1928 indicate about an 8 per cent. increase over 1927. The outstanding factors in the United States foreign sales of soda ash for 1928 were the consistency in sales to Europe and the North and Central American group, the large loss of South American business and the greater gain in the Far East. By far the largest customer for United States soda ash is Canada which took 38 per cent of the total in 1927 and 39 per cent of the 1928 total. In the European area purchases by Denmark, the Netherlands, and the United Kingdom have equalled those for 1927. In the North and Central American group, aside from Canada, Mexico and Cuba are the chief purchasers taking 32 per cent. of the 1927 total, compared to 26 per cent. of the 1928 purchases to date. The loss of some of the Mexican and Cuban business for the current year largely accounts for this decrease. The reduction in the 1928 South American business in soda ash to about one fourth of that for 1927 is due largely to Argentina's decreased purchases which are less by about $70,000, Colombia's less by nearly $20,000, and Chile's less by nearly $8,000. In the case of Argentina the

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
				Chloride flake, 375 lb. drs c-1 wks.....ton	.....	36.00	36.00	36.00
37.00	27.00	37.00	37.00	Important shipment....ton	.....	33.00	33.00	33.00
33.00	33.00	33.00	33.00	Fused, imp, 900 lb bbls NY ton	.....	31.00	31.00	31.00
31.00	31.00	31.00	31.00	Flusilicate, crys, 400 lb bbls wks.....lb.	.10	.10½	.10½	.10
.10½	.10	.10	.10	Oxide, USP, light, 100 lb bbls				
				.....lb.	.....	.42	.42	.42
.42	.42	.42	.42	Heavy, 250 lb bbls.....lb.	.....	.50	.50	.50
.50	.50	.50	.50	Peroxide, 100 lb cs.....lb.	.....	1.25	1.25	1.25
.....	.....	.....	.....	Silicofluoride, bbls.....lb.	.09¾	.10½	.10½	.09¾
.10½	.09¾	.12½	.09¾	Stearate, bbls.....lb.	.23	.25	.25	.23
.25	.23	.23	.23	Manganese Borate, 30%, 200 lb bbls.....lb.	.....	.24	.24	.24
.24	.24	.24	.24	Chloride, 600 lb casks.....lb.	.08	.08½	.08½	.08
.08½	.08	.08	.08	Dioxide, tech (peroxide) drs lb.	.....	.....		
.....	.....	.05	.04½	Ore, powdered or granular	.35	.40	.40	.35
.50	.35	.....	.....	75-80%, bbls.....lb.	.03	.03½	.03½	.03
.03½	.03	.03	.03	80-85%, bbls.....lb.	.04	.04½	.04½	.04
.04½	.04	.04	.04	85-88%, bbls.....lb.	.05	.05½	.05½	.05
.05½	.05	.05	.05	Sulfate, 550 lb drs NY.....lb.	.07	.07½	.07½	.07
.07½	.07	.07	.07	Mangrove 55%, 400 lb bbls...lb.	.03½	Nom.	Nom.	.03½
Nom.	.03½	.03½	.03½	Bark, African.....ton	.....	35.00	35.00	35.00
45.00	35.00	39.00	34.00	Marble Flour, bulk.....ton	10.00	12.00	12.00	10.00
12.00	10.00	10.00	10.00	Mercury metal.....75lb flask	120.00	121.00	121.00	120.00
132.00	121.00	129.00	99.00	Meta-nitro-aniline.....lb.	.72	.74	.74	.72
.74	.72	.72	.72	Meta-nitro-para-toluidine 200 lb. bbls.....lb.	1.50	1.55	1.55	1.50
1.80	1.50	1.70	1.70	Meta-phenylene-diamine 300 lb. bbls.....lb.	.90	.94	.94	.90
.94	.90	.90	.90	Meta-toluene-diamine, 300 lb bbls.....lb.	.72	.74	.74	.72
.74	.72	.72	.72					
				Methanol				
				Methanol, (Wood Alcohol), drs 95%.....gal.	.58	.65	.65	.58
.58	.46	.80	.55	97%, drums c-1.....gal.	.60	.65	.65	.60
.60	.47	.87	.57	Pure, drums lc-1.....gal.	.65	.68	.68	.65
.63	.44	.....	.....	Synthetic, drums c-1.....gal.	.63	.66	.66	.63
.58	.48	.....	.....	Denat. gre. tanks.....gal.	.60	.62	.62	.60
.75	.45	.80	.75	Methyl Acetate, drums.....gal.	.....	.95	.95	.95
.95	.95	.95	.95	Acetone, 100 gal drums...gal.	.83	.85	.85	.83
.90	.68	.88	.75	Anthraquinone, kegs.....lb.	.85	.95	.95	.85
.95	.85	1.00	.85	Cellosolve, (See Ethylene Glycol Mono Methyl Ether)	.....	.....		
.....	.....	.....	.....	Chloride, 90 lb cyl.....gal.	.55	.60	.....	.....
.60	.55	.55	.55	Furoate, 1 lb tins.....lb.	5.00		.60	.55
80.00	65.00	.03½	.03½	Mica, dry grd. bags wks.....lb.	65.00	80.00	80.00	65.00
115.00	110.00	.05½	.05½	Wet, ground, bags wks.....lb.	110.00	115.00	115.00	110.00
.....	.....	3.00	3.00	Michler's Ketone, kegs.....lb.	.....	3.00	3.00	3.00
				Monochlorobenzene, drums see, Chorobenzene, mono.....lb.				
.75	.70	.70	.70	Monoethylorthotoluidin, drs. lb.	.70	.75	.75	.70
				Monomethylaniline, 900 lb dr .....lb.	.....	1.05	1.05	1.05
1.05	1.05	1.05	1.05	Monomethylparaminosufate 100 lb drums.....lb.	3.95	4.20	4.20	3.95
4.20	3.95	3.95	3.95	Montan Wax, crude, bags....lb.	.06½	.07	.07	.06½
.07	.06½	.06½	.06½	Myrobalans 25%, liq bbls....b	.04½	.04½	.04½	.04½
.04½	.04½	.04	.04	50% Solid, 50 lb boxes.....lb.	.08	.08½	.08½	.08
.08½	.08	.08	.08	J1 bags.....ton	.....	43.00	43.00	43.00
50.00	42.00	43.50	41.00	J 2 bags.....ton	32.50	34.00	40.00	32.50
40.00	32.50	37.00	23.50	R 2 bags.....ton	32.50	34 00	34.00	32.50
40.00	32.50	37.00	30.00	Naphtha, v. m. & p. (deodorized) bbls.....gal.	.....	.18	.18	.18
.18	.18	.21	.18	Naphthalene balls, 250 lb bbls wks.....lb.	.....	.05½	.05½	.05½
.06	.05½	.06	.05½	Crushed, chipped bgs wks..lb.	.....	.04½	.04½	.04½
.04½	.04½	.04½	.04½	Flakes, 175 lb bbls wks....lb.	.....	.05	.05	.05
.05	.05	.05	.04½	Nickel Chloride, bbls kegs....lb.	.21	.24	.24	.21
.24	.21	.21	.21	Oxide, 100 lb kegs NY.....lb.	.35	.38	.38	.35
.38	.35	.35	.35	Salt bbl. 400 bbls lb NY...lb.	.09	.09¾	.09¾	.09
.09¾	.09	.09	.08½	Single, 400 lb bbls NY.....lb.	.08¾	.09	.09	.08¾
.09	.08¾	.08¾	.08	Nicotine, free 40%, 8 lb tins, cases.....lb.	1.25	1.30	1.30	1.25
1.30	1.25	1.25	1.10	Sulfate, 10 lb tins.....lb.	.98½	1.20	1.20	.98½
1.20	.98½	1.10	1.10	Nitre Cake, 500 lb bbls.....ton	13.00	14.00	14.00	13.00
14.00	13.00	13.00	13.00	Nitrobenzene, redistilled, 1000 lb drs wks.....lb.	.10½	.10½	.10½	.10½
.10½	.10½	.10½	.09¼	Nitrocellulose, regular drums wks.....lb.	.40	Nom.	Nom.	.40
Nom.	.40	.40	.40	Low viscosity (soln only)				
				Grade 1 drums, wks.....lb.	.55	Nom.	Nom.	.55
Nom.	.55	.55	.55	Grade 2 drums, wks.....lb.	.50	Nom.	Nom.	.50
Nom.	.50	.50	.50	Nitrogenous Material, bulk..unit	.....	4.00	4.00	4.00
4.00	3.35	3.60	3.35	Nitronaphthalene, 550 lb bbls.lb.	.....	.25	.25	.25
.25	.25	.25	.25	Nitrotoluene, 1000 lb drs wks.lb.	.14	.15	.15	.14
.15	.14	.14	.14	Nutgalls Aleppy, bags.....lb.	.25	Nom.	Nom.	.25
Nom.	.25	.25	.25	Chinese, bags.....lb.	.17	.18	.18	.17
.18	.17	.17	.17	Powdered, bags.....lb.	.22	.24	.24	.22
.24	.22	.22	.22	Oak, tanks, wks.....lb.	.....	.03½	.03½	.03½
.03½	.03½	.03½	.03½	23-25% liq., 600 lb bbl wk lb.	.04	.04½	.04½	.04
.04½	.04	.04	.04	Oak Bark, ground.....ton	45.00	50.00	50.00	45.00
50.00	45.00	45.00	45.00	Whole.....ton	20.00	23.00	23.00	20.00
23.00	20.00	20.00	20.00	Orange-Mineral, 1100 lb casks NY.....lb.	.11½	.12½	.12½	.11½
.13½	.13	.14½	.13	Orthoaminophenol, 50 lb kgs..lb.	2.20	2.25	2.25	2.20
2.25	2.20	2.20	2.20	Orthoanisidine, 100 lb drs....lb.	2.35	2.50	2.50	2.35
2.50	2.35	2.50	2.35	Orthochlorophenol, drums....lb.	.50	.65	.65	.50
.65	.50	.50	.50	Orthocresol, drums.....lb.	.18	.28	.28	.18
.28	.18	.18	.18	Orthodichlorobenzene, 1000 lb drums.....lb.	.06	.07	.07	.06
.07	.06	.06	.06	Orthonitrochlorobenzene, 1200 lb drs wks.....lb.	.32	.35	.35	.32
.35	.32	.32	.32					

Sulphuric Acid

60° and 66° Commercial
66° Textile Clear Electrolyte

Prompt Shipment—Any Quantities
In Tank Cars, Drums or Carboys

Copper Sulphate

Granular, Large, Medium and
Small Crystals

SOUTHERN AGRICULTURAL CHEMICAL CORP.

General Sales Offices

ATLANTA : : 621-625 Grant Building : : GEORGIA

DISCRIMINATION

is the perogative of every buyer and should be exercised especially in the purchase of pure chemicals for medicinal and scientific uses.

Mallinckrodt CHEMICALS

appeal to critical users wherever purity and reliability are required. They represent *distinctive excellence*, the natural development of sixty years of manufacturing experience.

Send for our complete price list

MALLINCKRODT CHEMICAL WORKS

SAINT LOUIS MONTREAL PHILADELPHIA NEW YORK

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Jan. 1929 $1.028

purchases of soda ash in 1928 were largely from Great Britain (80 per cent.). In the Far East the total gain of nearly $100,000 in United States soda ash sales includes noteworthy increases to Japan ($107,000) and China ($17,000); the Japanese business has declined over $9,000; and nearly half of the Australian trade ($12,000) has been with other countries. In the Philippines and New Zealand 1928 sales exceed those of 1927 slightly while the Union of South Africa has taken over two and one half times the 1927 purchases.

Soda Caustic — Demand continues good and the firmness of the market has been quite pronounced although not quite up to that existing in the market for ash. Electrolytic material is maintaining somewhat stronger views than formerly and this has had a strengthening effect upon the entire market. Exports during the first eleven months of 1928 reached a total of 109,387,773 pounds, as compared with 88,792,420 pounds in the corresponding period of the previous year.

Sodium Nitrate — Has advanced to $2.22½ per 100 pounds due to continued high freight rates as pointed out here last month. Demand is reported to be improving especially in the South. According to reports an important decision has been taken by the Chilean nitrate authorities. If at the end of the current nitrate year (June 30 next) conditions in the world nitrate market seem to show that the whole of the increased output of nitrate will not naturally be consumed by the increased demand considerable reductions in the fixed world market prices will be made and will come into force at once with the beginning of the next nitrate year. All stocks accumulated on June 30 will be sold at the reduced price, but to protect the holders of the stocks a fall clause will provide that any losses on the stocks will be made up to them. In their annual report, Messrs. Aikman, Ltd., London, say that "both production and consumption of nitrogenous fertilizers have continued to expand and the estimate of production of pure nitrogen made six months ago for the twelve months ending June 30, 1929, of 1,975,000 tons seems likely to prove fairly accurate. Of this quantity, Chilean nitrate will represent about 500,000 tons, or 25 1-3rd per cent., against 23¾ per cent., 20½ per cent., 26¾ per cent., 33⅓ per cent., and 35 per cent. for the previous five years. This steady improvement is primarily due to Chilean prices having come more into line with other nitrogenous products, and also to a growing appreciation of its unequalled qualities. This improvement is likely to make further headway during the next few years, with the substantial help that the industry is

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
				Orthonitrotoluene, 1000 lb drs			
.18	.17	.13	.13	wk.....lb.	.17	.18	.17
.90	.85	.85	.85	Orthonitrophenol, 350 lb dr..lb.	.85	.90	.85
.31	.29	.29	.25	Orthotoluidine, 350 lb bbl 1c-1 lb.	.29	.31	.31	.29
				Orthonitroparachlorphenol, tins			
.75	.70	.70	.70	.....lb.	.70	.75	.75	.70
.17	.16	.16	.16	Osage Orange, crystals.....lb.	.16	.17	.17	.16
.07	.07	.07	.07	51 deg. liquid.....lb.	.07	.07½	.07½	.07
.15	.14½	.14½	.14½	Powdered, 100 lb bags.....lb.	.14½	.15	.15	.14½
				Paraffin, refd, 200 lb cs slabs			
.06½	.06½	.06½	.06½	123-127 deg. M. P.....lb.	.06½	.06½	.06½	.06½
.07½	.07½	.07½	.07½	128-132 deg. M. P.....lb.	.07½	.07½	.07½	.07½
.08½	.08	.08	.08	133-137 deg. M. P.....lb.	.08	.08½	.08½	.08
.10	.08½	.08½	.08½	138-140 deg. M. P.....lb.	.08½	.10	.10	.08½
.28	.20½	.29	.26	Para Aldehyde, 110-55 gal drs..lb.	.20½	.23	.28	.20½
1.05	1.00	1.00	1.00	Aminoacetanilid, 100 lb bg..lb.	1.00	1.05	1.05	1.00
				Aminohydrochloride, 100 lb kegs			
1.30	1.25	1.25	1.25	.....lb.	1.25	1.30	1.30	1.25
1.15	1.15	1.15	1.15	Aminophenol, 100 lb kegs..lb.	.....	1.15	1.15	1.15
.65	.50	.50	.50	Chlorophenol, drums.....lb.	.50	.65	.65	.50
.....	.....	.12	.12	Coumarone, 330 lb drums..lb.	.....	.....	.....	.....
2.50	2.25	2.25	2.25	Cymene, refd, 110 gal dr..gal.	2.25	2.50	2.50	2.25
				Dichlorobenzene, 150 lb bbls			
.20	.17	.17	.17	wks.....lb.	.17	.20	.20	.17
.55	.50	.53	.50	Nitroacetanilid, 300 lb bbls.lb.	.50	.55	.55	.50
				Nitroaniline, 300 lb bbls wks			
.59	.48	.52	.52	.....lb.	.48	.59	.49	.48
				Nitrochlorobenzene, 1200 lb drs			
.32	.32	.32	.32	wks.....lb.	.....	.32	.32	.32
				Nitro-orthotoluidine, 300 lb			
2.85	2.75	2.75	2.75	bbls.....lb.	2.75	2.85	2.85	2.75
.55	.50	.50	.50	Nitrophenol 185 lb bbls....lb.	.50	.55	.55	.50
				Nitrosodimethylaniline, 120 lb.			
.94	.92	.92	.92	bbls.....lb.	.92	.94	.94	.92
.30	.30	.30	.25	Nitrotoluene, 350 lb bbls....lb.	.....	.30	.30	.30
				Phenylenediamine, 350 lb bbls			
1.20	1.15	1.20	1.15	.....lb.	1.15	1.20	1.20	1.15
				Tolueneulfonamide, 175 lb			
.41	.40	.40	.40	bbls.....lb.	.40	.41	.41	.40
				Toluenesulfonchloride, 410 lb			
.22	.20	.20	.18	bbls wks.....lb.	.20	.22	.22	.20
.42	.40	.45	.38	Toluidine, 350 lb bbls wk...lb.	.40	.42	.42	.40
				Paris Green, Arsenic Basis			
.25	.20	.21	.21	100 lb kegs.....lb.	.....	.25	.25	.25
.23	.17	.19	.19	250 lb kegs.....lb.	.....	.23	.23	.23
.....	.....	.25	.25	Persian Berry Ext., bbls.....lb.	.....	.....	.....	.....
.03	.02½	.02½	.02½	Petrolatum, Green, 300 lb bbl.lb.	.02½	.03	.03	.02½
.13	.20	.18	.16	Phenol, 250-100 lb drums.....lb.	.13¾	.16	.16	.13¾
				Phenyl - Alpha - Naphthylamine,			
1.35	1.35	1.35	1.28	100 lb kegs.....lb.	.....	1.35	1.35	1.35
				Phosphate			
				Phosphate Rock, f.o.b. mines			
3.15	3.00	3.00	3.00	Florida Pebble, 68% basis..ton	3.00	3.15	3.15	3.00
3.65	3.50	3.50	3.50	70% basis.....ton	3.50	3.65	3.65	3.50
4.15	4.00	4.00	3.85	72% basis.....ton	4.00	4.15	4.15	4.00
5.00	5.00	5.35	5.00	75-74% basis.....ton	.....	5.00	5.00	5.00
5.75	5.75	5.75	5.60	75% basis.....ton	.....	5.75	5.75	5.75
6.25	6.25	6.25	6.00	77-76% basis.....ton	.....	6.25	6.25	6.25
5.00	5.00	5.50	5.00	Tennessee, 72% basis.....ton	.....	5.00	5.00	5.00
				Phosphorous Oxychloride 175 lb			
.40	.35	.35	.35	cyl.....lb.	.35	.40	.40	.35
.65	.60	.65	.60	Red, 110 lb cases.....lb.	.60	.65	.65	.60
.32	.32	.32	.32	Yellow, 110 lb cases wks..lb.	.....	.32	.32	.32
.46	.46	.46	.46	Sesquisulfide, 100 lb cs.....lb.	.....	.46	.46	.46
.....	.....	.35	.35	Trichloride, cylinders.....lb.	.....	.....	.....	.....
				Phthalic Anhydride, 100 lb bbls			
.20	.18	.18	.18	wks.....lb.	.18	.20	.20	.18
				Pigments Metallic, Red or brown			
45 00	37.00	40.00	37.00	bags, bbls, Pa. wks.....ton	37.00	45.00	45.00	37.00
				Pine Oil, 55 gal drums or bbls			
.64	.63	.63	.63	Destructive dist.....lb.	.63	.64	.64	.63
10.60	8.00	8.00	8.00	Prime bbls.....bbl.	8.00	10.60	10.60	8.00
.70	.70	.70	.66	Steam dist. bbls.....gal.	.....	.70	.70	.70
				Pitch Hardwood,			
45.00	40.00	40.00	40.00	wks.....ton	40.00	45.00	45.00	40.00
				Plaster Paris, tech, 250 lb bbls			
3.30	3.30	3.30	3.30	.....bbl.	.....	3.30	3.30	3.30
				Potash			
.07½	.07½	.07½	.07½	Potash, Caustic, wks.....lb.	.....	.07½	.07½	.07½
.07½	.07½	.07½	.07½	Imported casks c-1.....lb.	.....	.07½	.07½	.07½
				Potash Salts, Rough Kainit			
9.00	9.00	9.00	9.00	12.4% basis bulk.....ton	.....	9.00	9.00	9.00
9.50	9.50	9.50	9.50	14% basis.....ton	.....	9.50	9.50	9.50
				Manure Salts			
12.40	12.40	12.40	12.40	20% basis bulk.....ton	.....	12.40	12.40	12.40
18.75	18.75	18.75	18.75	30% basis bulk.....ton	.....	18.75	18.75	18.75
				Potassium Muriate, 80% basis			
36.40	36.40	36.40	36.40	bags.....ton	.....	36.40	36.40	36.40
				Pot. & Mag. Sulfate, 40% basis			
27.00	27.00	27.00	27.00	bags.....ton	.....	27.00	27.00	27.00
				Potassium Sulfate, 90% basis			
47.30	47.30	47.30	47.30	bags.....ton	.....	47.30	47.30	47.30
				Potassium Bicarbonate, USP, 320			
.09½	.09	.09	.09	lb bbls.....lb.	.09	.09½	.09½	.09½
				Bichromate Crystals, 725 lb			
.09½	.08½	.08½	.08	casks.....lb.	.09	.09½	.09½	.09
.12½	.12	.12	.11	Powd., 725 lb cks wks....lb.	.13	.13½	.13½	.13

WMW — CHEMICALS

AMMONIUM PHOSPHATE

BEAR BRAND PHOSPHATE PRODUCTS TRADE MARK

"We are manufacturing at our Camden Works all the various grades of Ammonium Phosphate and we sincerely solicit your inquiries whenever you are in the market."

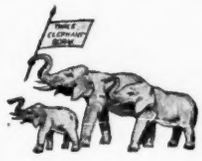
WILCKES-MARTIN-WILCKES CO.

Chemical Works: Camden, New Jersey

Main Office: 135 William Street, N. Y. C.

Sales Representatives: St. Louis, Detroit, Camden, N. J., Boston, San Francisco, Chicago, New Orleans

THREE ELEPHANT
BORAX
99.5 % Pure



Let us protect you on both quality and price. Analysis supplied with every shipment. We will be glad to quote you. We also make Boric Acid, guaranteed 99.5% pure.

Write us to-day

American Potash & Chem. Corp.
Woolworth Building, New York City

Barrett Standard

ANHYDROUS
AMMONIA

ARCADIAN
Reg. U.S. Pat. Off.
NITRATE OF SODA

The Barrett Company
Ammonia-Benzol Department

40 Rector St. New York, N. Y.

PETROLEUM SUBSTITUTE for TOLUOL

LACTOL SPIRITS No. 1

Will replace a large percentage of
Toluol in Lacquer Formulation.

CHEMICAL SOLVENTS
INCORPORATED

Telephone Gramercy 2938-2939 297 Fourth Avenue, New York

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Jan. 1929 $1.028

now receiving from the Chilean Government. After one year of free selling, producers have fixed prices and conditions of sale in all the consuming markets of Europe and Egypt, and by introducing a form of centralised selling, exercise a full measure of control. By fixing values at very moderate levels, producers have made it possible for Chilean nitrate to compete successfully with synthetic nitrogenous products, and there is every reason for Chile to anticipate again this year a satisfactory extension in the demand. The significance of the changed method of selling has not been generally realized, as it places in the hands of the Chilean Government the power to dictate prices in these markets, and should eventually pave the way to an international agreement on nitrogen prices. So far as the United States and other countries—where the competition from synthetic products is, so far, less acute—are concerned, prices have for the present been fixed f. o. b. Chile.

A cable report to the Department of Commerce states that the 69 oficinas operating during November produced in that month 286,000 metric tons of nitrate, as compared with 280,000 metric tons during November of 1927. Exports of Chilean nitrate of soda for November, 1928 and 1927 were 285,000 metric tons and 274,800 metric tons, respectively. World stocks at the end of November, 1928, amounted to 1,995,500 metric tons as compared with 1,417,300 metric tons on December 1, 1927. The production of Chilean nitrate for the first eleven months of 1928 of approximately 2,900,000 metric tons is the largest in the history of the industry but stocks on hand are reported to be very heavy. December production amounted to 288,947 tons, against 230,000 tons in December, 1927.

Sodium Nitrite—Is in unusually firm condition with producers working to capacity to keep pace with demand. Prices remain unchanged.

Sodium Phosphate — Hearings on the cost-of-production investigation with a view to increasing the duty, were held as scheduled, January 15 and 16. Briefs are to be filed February 11 and no developments may be expected in the market until the final decision is rendered.

Starch — Has also been subject to the same revision in quotations as has dextrin; i. e. a removal of the trade allowance of 30c per 100 lbs. and an increase in price of 15c per 100 lbs. due to strength of grain market. Quotations are now at $3.82 @ $4.02 per 100 lbs. on powdered, and $3.72 @ $3.92 on pearl.

Sulfur — United States sulfur exports declined nearly 104,000 tons from 789,270 tons in 1927, to 685,360 tons in 1928,

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
.17	.16	.16	.16	Binoxiate, 300 lb bbls.....lb.	.16	.17	.17	.16
.30	.30	.30	.30	Bisulfate, 100 lb kegs.....lb.	.....	.30	.30	.30
.05½	.05½	.05½	.05½	Carbonate, 80-85% calc. 800 lb casks.....lb.	.05½	.05½	.05½	.05½
.09	.06½	.08½	.08½	Chlorate crystals, powder 112 lb keg wks.....lb.	.08½	.09	.09	.08½
.08½	.07½	.08½	.08½	Imported 112 lb kegs NY.....lb...	.07½	.07½	.07½	.07½
.05½	.05½	.05½	.05½	Chloride, crys bbls.....lb.	.05½	.05½	.05½	.05½
.28	.27	.27	.27	Chromate, kegs.....lb.	.27	.28	.28	.27
.57½	.55	.55	.55	Cyanide, 110 lb. cases.....lb.	.55	.57½	.57½	.55
.12	.11½	.11½	.11½	Metabisulfite, 300 lb. bbl...lb.	.11½	.12	.12	.11½
.17	.16	.16	.16	Oxalate, Neut. 225 lb. bbls.lb.	.16	.17	.17	.16
.12	.11	.11	.11	Perchlorate, casks wks.....lb.	.11	.12	.12	.11
.15½	.15	.15½	.14½	Permanganate, USP, crys 500 & 100 lb drs wks.....lb.	.16	.16½	.16½	.16
.38	.37	.39	.37½	Prussiate, red, 112 lb keg...lb.	.37	.38	.38	.37
.18½	.18	.18	.18	Yellow, 500 lb casks.....lb.	.18½	.21	.21	.18½
.51	.51	.51	.51	Tartrate Neut, 100 lb keg..lb.	.....	.21	.51	.51
.25	.25	.25	.25	Titanium Oxalate, 200 lb bbls .....lb.	.....	.25	.25	.25
.....	.....	.....	.....	Propyl Furoate, 1 lb tins.....lb.	.....	5.00		
.05	.04	.04	.04	Pumice Stone, lump bags.....lb.	.04	.05	.05	.04
.06	.04½	.04½	.04½	250 lb bbls.....lb.	.04½	.06	.06	.04½
.03	.02½	.02½	.02½	Powdered, 350 lb bags.....lb.	.02½	.03	.03	.02½
.03½	.03½	3.75	3.75	Putty, commercial, tubs..100 lb.	.....	.03½	.03½	.03½
.05½	.05½	5.50	5.50	Linseed Oil, kegs.....100 lb.	.....	.05½	.05½	.05½
1.50	1.50	3.00	1.50	Pyridine, 50 gal drums.....gal.	.....	1.50	1.50	1.50
.13¼	.13	.13	.12	Pyrites, Spanish cif Atlantic ports bulk.....unit	.13	.13¼	.13¼	.13
.04	.03	.03	.03	Quebracho, 35% liquid tks....lb.	.03½	.04	.04	.03½
.04½	.03½	.03½	.03½	450 lb bbls c-1.....lb.	.03½	.04½	.04½	.03½
.05½	.04	.04	.04	35% Bleaching, 450 lb bbl .lb.	.04½	.05½	.04½	.05½
.05½	.05	.05	.04⅝	Solid, 63%, 100 lb bales cif..lb.	.05½	.05½	.05½	.05½
.05⅝	.05	.05	.05	Clarified, 64%, bales.....lb.	.....	.05⅝	.05⅝	.05⅝
.06	.05½	.06½	.06½	Quercitron, 51 deg liquid 450 lb bbls.....lb.	.05½	.06	.06	.05½
.13	.10	.10	.10	Solid, 100 lb boxes.....lb.	.10	.13	.13	.10
14.00	14.00	14.00	14.00	Bark, Rough.....ton	.....	14.00	14.00	14.00
35.00	34.00	34.00	34.00	Ground.....ton	34.00	35.00	35.00	34.00
.46	.45	.45	.45	R Salt, 250 lb bbls wks.....lb.	.45	.46	.46	.45
.....	.....	.18	.18	Red Sanders Wood, grd bbls..lb.	.....	.....	.....	.....
1.35	1.25	1.25	1.25	Resorcinol Tech, cans.....lb.	1.25	1.35	1.35	1.25
.57	.57	.67	.57	Rosin Oil, 50 gal bbls, first run .....gal.	.....	.57	.57	.57
.62	.62	72	.62	Second run.....gal.	.....	.62	.62	.62
				Rosin				
9.75	8.20	13.00	8.50	Rosins 600 lb bbls 280 lb...unit B.....	.....	8.30	8.30	8.30
9.80	8.25	13.00	8.50	D.....	.....	8.65	8.65	8.65
9.95	8.60	13.15	8.50	E.....	.....	9.10	9.10	9.10
10.10	8.65	13.20	8.50	F.....	.....	9.20	9.20	9.20
10.10	8.75	13.25	8.50	G.....	.....	9.25	9.25	9.25
10.10	8.75	13.30	8.50	H.....	.....	9.35	9.35	9.35
10.15	8.80	13.35	8.55	I.....	.....	9.35	9.35	9.35
10.15	8.85	14.80	8.65	K.....	.....	9.55	9.55	9.55
10.30	8.85	15.00	8.80	M.....	.....	9.85	9.85	9.85
11.00	9.15	15.85	9.15	N.....	.....	10.30	10.30	10.30
11.65	10.15	16.60	10.50	WG.....	.....	11.30	11.30	11.30
12.65	10.40	18.55	12.00	WW.....	.....	12.30	12.30	12.30
30.00	24.00	24.00	24.00	Rotten Stone, bags mines....ton	24.00	30.00	30.00	24.00
.08	.07	.07	.07	Lump, imported, bbls.....lb.	.07	.08	.08	.07
.12	.09	.09	.09	Selected bbls.....lb.	.09	.12	.12	.09
.05	.02	.02	.02	Powdered, bbls.....lb.	.02	.05	.05	.02
.05	.04½	.04½	.04½	Sago Flour, 150 lb bags.....lb.	.04½	.05	.05	.04½
.....	.....	.90	.90	Sal Soda, bbls wks.....100 lb.	.....	.....	.....	.....
20.00	19.00	19.00	19.00	Salt Cake, 94-96% c-1 wks..ton	19.00	20.00	20.00	19.00
17.00	15.00	15.00	15.00	White, 87% wks.....ton	15.00	17.00	17.00	15.00
.06½	.06½	.06½	.06½	Saltpetre, double refd granular 450-500 lb bbls.....lb.	.06½	.06½	.06½	.06½
.01½	.01½	.01½	.01½	Satin, White, 500 lb bbls.....lb.	.....	.01½	.01½	.01½
.62½	.49	.66	.47	Shellac Bone dry bbls.....lb.	.....	.59	.59	.59
.55	.45	.57	.41	Garnet, bags.....lb.	.....	.45	.45	.45
.58	.47	.65	.40	Superfine, bags.....lb.	.....	.47	.47	.47
.55	.42	.37	.57	T. N. bags.....lb.	.....	.44	.44	.44
.57	.53	.50	.50	Schaeffer's Salt, kegs.....lb.	.53	.57	.57	.53
11.00	8.00	6.00	6.00	Silica, Crude, bulk mines....ton	8.00	11.00	11.00	8.00
30.00	22.00	15.00	15.00	Refined, floated bags.....ton	22.00	30.00	30.00	22.00
.....	.....	32.00	32.00	Air floated bags.....ton	.....	.....	.....	.....
40.00	32.00	55.00	55.00	Extra floated bags.....ton	32.00	40.00	40.00	32.00
22.00	15.00	15.00	15.00	Soapstone, Powdered, bags f. o. b. mines.....ton	15.00	22.00	22.00	15.00
				Soda				
1.40	1.40	1.32½	1.32½	Soda Ash, 58% dense, bags c-1 wks.....100 lb.	.....	1.40	1.40	1.40
2.29	2.40	2.14	2.04	58% light, bags.....100 lb.	.....	1.34½	1.34½	1.34½
1.32½	1.32½	1.32½	1.32½	Contract, bags c-1 wks.100 lb.	.....	1.32	1.32	1.32
4.21	4.16	4.16	4.06	Soda Caustic, 76% grnd & flake drums.....100 lb.	.....	3.35	3.35	3.35
3.91	3.76	3.76	3.66	76% solid drs.....100 lb.	.....	2.95	2.95	2.95
3.00	3.00	3.00	3.00	Contract, c-1 wks.....100 lb.	.....	2.90	2.90	2.90
.05	.04½	.04½	.04½	Sodium Acetate, crystals, 450 lb. bbls wks.....lb.	.04½	.05	.05	.04½
.....	.....	.19	.18	Arsenate, drums.....lb.	.....	.....	.....	.....
.....	.....	1.00	1.00	Arsenite, drums.....gal.	.....	.....	.....	.....
2.41	2.41	2.41	2.41	Bicarb, 400 lb bbl NY..100 lb.	.....	2.41	2.41	2.41

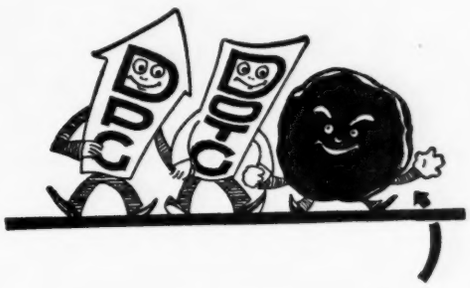
NAARDEN
CHEMICAL WORKS

PHENOLPHTALEIN

Powder Impalpable

NAARDEN (Holland)

P. B. 2 Bussum
Cable Address: Chemische Bussum



Good Friends!

Every batch of rubber gets along well with the guanidines—D. O. T. G. and D. P. G. That's why they are preferred by the leaders. Try W-80 or W-29 for low temperatures.

DOVAN CHEMICAL CORPORATION
30 Church Street, New York

Stock is always carried by

J. A. Kendall, Akron, Ohio, and Chicago, Ill.; J. E. Odell, Boston, Mass.; American Oil & Supply Co., Trenton, N. J.; C. A McLarty, Toronto and Montreal; Martin, Hoyt, & Milne, San Francisco and Los Angeles; Buckleton & Co., Ltd., 20 Chapel Street, Liverpool, England.

NATIONAL
CARBANTHRENE DYES

represent that class
of Vat Dyes excelling
all others in fastness.

National Aniline & Chemical Co., Inc.
40 Rector Street, New York, N. Y.

Boston · Providence · Chicago · Charlotte · Toronto · Philadelphia · San Francisco

NATIONAL DYES

Up to Standard

As there are 100 cents in every dollar, so the strength of Lewis chemicals is always up to standard--you get the results you expect.

IMPERIAL BRAND
JOHN D. LEWIS

Acetine
Tannic Acid
Tartar Emetic
Antimony Lactate
Steam Black
Acetate of Chrome
Fluoride of Chrome

Manufacturer and Importer

DYE STUFFS & CHEMICALS

Office and Warehouse:
Fox Point, Providence, R. I.

Works: **Mansfield, Mass.**

NEW YORK
11 Cliff Street

BOSTON
40 Central Street

according to the Department of Commerce. The relation of exports to production for these periods was 35 per cent. estimated in 1927, compared to 32 per cent. in 1928. The value of the 1928 exports was 11.7 per cent. less than that of the 1927 exports.

Toluene — Is beginning to recover from somewhat curtailed activity of the early weeks of this year and is moving in large volume which speaks well for the future when automobile production approaches its 1929 peak.

Turpentine — Spirits has declined to 59½c @ 65c gal. during the past month but it is now thought that the low point has been reached. Wood distilled is somewhat higher at 59c gal.

Xylene — Following the trend of the toluol market, the volume of xylol shipments has shown a decline for the month as a whole, but towards the end of the month was beginning to increase rapidly, which augurs well for the future.

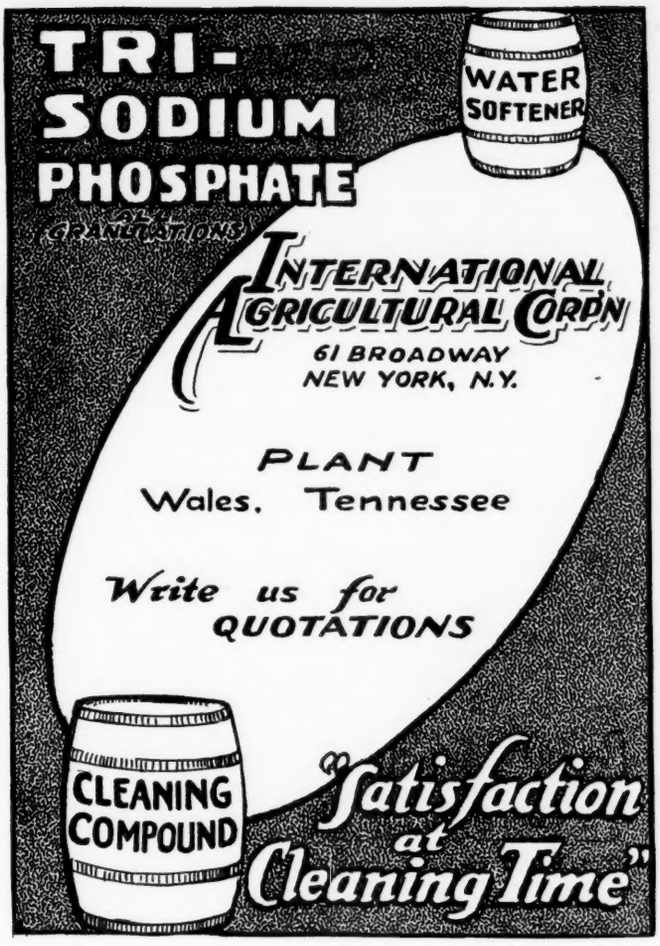
OILS AND FATS

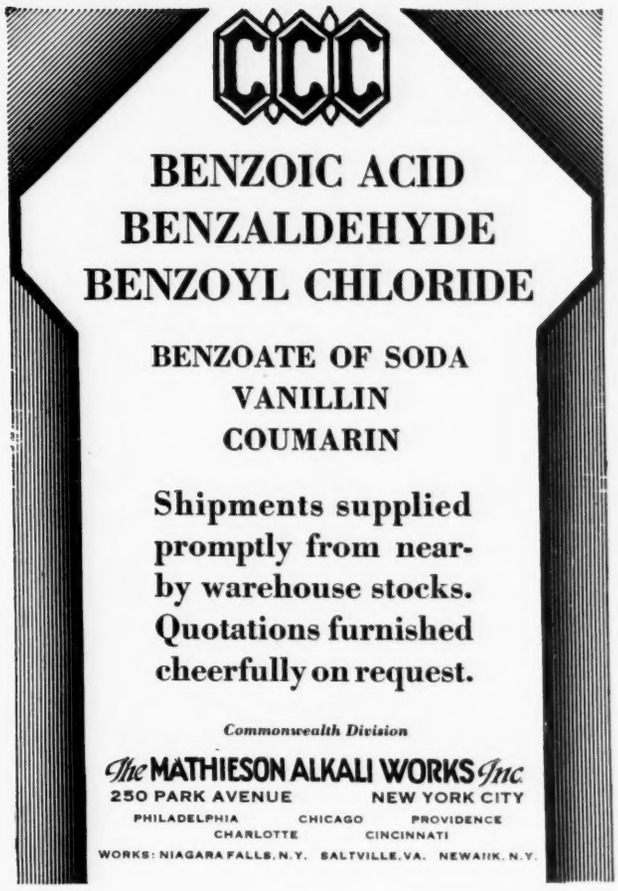
Chinawood Oil — Has been advancing steadily since last reported so that tanks at the Coast are now quoted at 14½c @ 14⅝c lb., an increase of 1c lb. during the past month. Spot prices are also higher being at 15c @ 15¼c lb. Although the market has been strong, the chief reason underlying the advance has been the export tax levied by the Chinese Government, which just went into effect at the first of February, but which was anticipated in most quarters. The advance amounted to about five per cent. over the present tariff and at present values is equivalent to about ¾c lb. Total December exports of wood oil from Hankow amounted to 25,915 barrels (9,977,275 pounds) of which 17,843 barrels (6,869,555 pounds) went to the United States and 8,072 barrels (3,107,720 pounds) to Europe. Unsold stocks at Hankow at the end of December were estimated at approximately 300 tons. Total exports of wood oil were considerably higher in December in comparison with the previous month and the same month of 1927, and shipments to the United States and Europe were larger although price quotations in China were practically the same. Exports during November were 6,593,125 pounds of which 3,845,765 pounds went to the United States and 2,747,360 pounds to Europe. Exports December 1927 amounted to 7,281,890 pounds, of which 5,173,245 pounds went to the United States and 2,108,645 pounds to Europe.

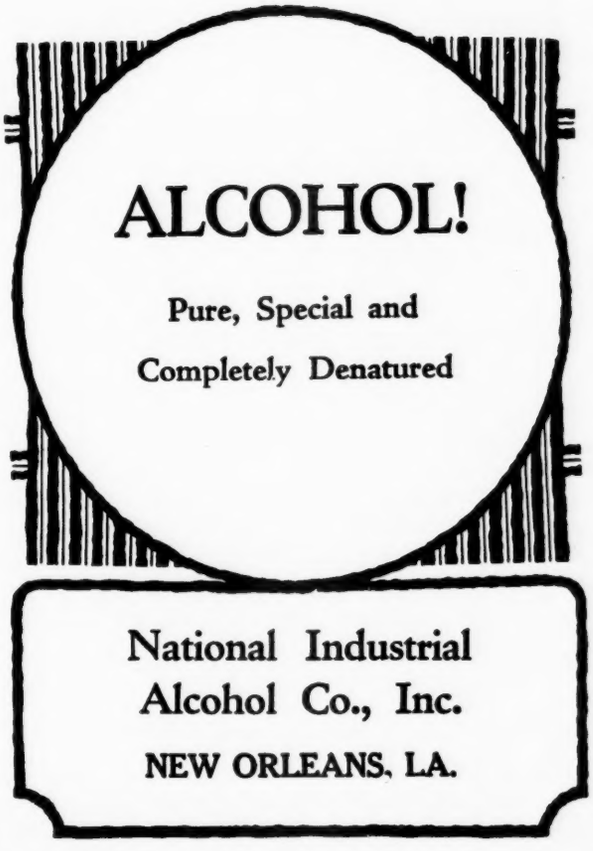
1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
.07	.06¼	.06½	.06½	Bichromate, 500 lb cks wks.lb.	.07½	.07½	.07½
.04	.04	.08½	.08½	Bisulfite, 500 lb bbl wks....lb.	.....	.04	.04
1.35	1.30	1.30	1.30	Carb. 350 lb bbls NY..100 lb.	1.30	1.35	1.35
.06¾	.05¾	.06½	.06½	Chlorate, 112 lb kegs wks..lb.	.06¼	.07	.07
13.00	12.00	12.00	12.00	Chloride, technical.....ton	12.00	13.00	13.00
.20	.20	.20	.20	Cyanide, 96-98%, 100 & 250 lb drums wks.....lb.	.....	.20	.20
.09	.08¼	.08¼	.08¼	Fluoride, 300 lb bbls wks...lb.	.08¾	.09	.09
.24	.22	.22	.22	Hydrosulfite, 200 lb bbls f. o. b. wks.....lb.	.22	.24	.24
.05	.05	.05	.05	Hypochloride solution, 100 lb cbys.....lb.	.....	.05	.05
3.05	2.65	2.65	2.65	Hyposulfite, tech, pea cyrs 375 lb bbls wks.....100 lb.	2.65	3.05	3.05
2.65	2.40	2.40	2.40	Technical, regular crystals 375 lb bbls wks....100 lb.	2.40	2.65	2.65
.45	.45	.70	.45	Metanilate, 150 lb bbls....lb.	.....	.45	.45
.....	.....	.02½	.02½	Monohydrate, bbls.....lb.	.....	.....	.....
.57	.55	.55	.55	Naphthionate, 300 lb bbl...lb.	.55	.57	.57
2.45	2.12½	2.67	2.25	Nitrate, 92%, crude, 200 lb bags c-1 NY.....100 lb.	.....	2.22½	2.22½
.08¼	.07½	.08¼	.08	Nitrite, 500 lb bbls spot....lb.	.07½	.08	.08
.27	.25	.25	.25	Orthochlorotoluene, sulfonate, 175 lb bbls wks.....lb.	.25	.27	.27
.23	.20	.20	.20	Oxalate Neut, 100 lb kegs..lb.	.20	.23	.23
3.90	3.90	3.90	3.90	Paratoluene, tri-sodium, tech. 100 lb bbls c-1....100 lb.	.....	3.90	3.90
.09	.08	.08	.08	Sulfonate, 175 lb bbls....lb.	.08	.09	.09
.22	.21	.21	.21	Perborate, 275 lb bbls.....lb.	.21	.22	.22
3.55	3.25	3.25	3.25	Phosphate, di-sodium, tech. 310 lb bbls.....100 lb.	3.25	3.55	3.55
.....	.....	.....	.....	tri-sodium, tech, 325 lb bbls.....100 lb.	3.90	4.00	4.00
.72	.69	.69	.69	Picramate, 100 lb kegs.....lb.	.69	.72	.72
.12½	.12	.12	.11	Prussiate, Yellow, 350 lb bbl wks.....lb.	.12	.12½	.12½
.14	.13½	.13½	.13½	Pyrophosphate, 100 lb keg..lb.	.13½	.14	.14
1.45	1.20	1.20	1.20	Silicate, 40 deg clear 55 gal drs wks.....100 lb.	1.20	1.45	1.45
1.10	.85	.85	.85	40 deg turbid 55 gal drs wks.....100 lb.	.85	1.10	1.10
.05	.05	.04½	.04½	Silicofluoride, 450 lb bbls NY .....lb.	.05	.05½	.05½
.49	.48½	.48½	.48½	Stannate, 100 lb drums....lb.	.48½	.49	.49
.29	.18	.20	.20	Stearate, bbls.....lb.	.18	.22	.29
.18	.16	.16	.16	Sulfanilate, 400 lb bbls.....lb.	.16	.18	.18
.02½	.02½	.02½	.02½	Sulfate Anhyd, 550 lb bbls c-1 wks.....lb.	.02½	.02½	.02½
.02½	.02½	.02½	.02½	Sulfide, 30% crystals, 440 lb bbls wks.....lb.	.02½	.02½	.02½
.04	.03½	.03½	03½	62% solid, 650 lb drums 1c-1 wks.....lb.	.03½	.04	.04
.03½	.03½	.03½	.03½	Sulfite, crystals, 400 lb bbls wks.....lb.	.03½	.03½	.03½
.50	.40	.40	.40	Sulfocyanide, bbls.....lb.	.40	.50	.50
.85	.80	.85	.80	Tungsta, tech, crystals, kegs .....lb.	.80	.85	.85
.40	.35	.40	.35	Solvent Naphtha, 110 gal drs wks.....gal.	.35	.40	.40
.01½	.01½	.01½	.01⅜	Spruce, 25% liquid, bbls.....lb.	.....	.01½	.01½
.01	.01	.01	.01	25% liquid, tanks wks.....lb.	.....	.01	.01
.02¼	.02	.02	.02	50% powd, 100 lb bag wks lb.	.02	.02¼	.02¼
4.42	3.07	3.22	3.07	Starch, powd., 140 lb bags .....100 lb.	3.82	4.02	4.02
4.32	2.97	3.12	2.97	Pearl, 140 lb bags.....100 lb.	3.72	3.92	3.92
.06¾	.05¾	.06	.04¾	Potato, 200 lb bags.....lb.	.05½	.06½	.06¾
.06¾	.05¾	.06¼	.06¼	Imported bags.....lb.	.05½	.06¼	.06¾
.08½	.08	.08	.06	Soluble.....lb.	.08	.08½	.08½
.10	.09½	.09½	.09	Rice, 200 lb bbls.....lb.	.09½	.10	.10
.07	.06½	.06½	.06½	Wheat, thick bags.....lb.	.06½	.07	.07
.10	.09½	.09½	.09½	Thin bags.....lb.	.09½	.10	.10
.07½	.07¼	.07¼	.07¼	Strontium carbonate, 600 lb bbls wks.....lb.	.07½	.07½	.07½
.09	.08¼	.08¼	.08	Nitrate, 600 lb bbls NY....lb.	.08¼	.09	.09
.....	.....	.....	.....	Peroxide, 100 lb drs.....lb.	.....	1.25	1.25

Sulfur

2.05	2.05	2.05	2.05	Sulfur Brimstone, broken rock, 250 lb bag c-1.....100 lb.	.....	2.05	2.05
19.00	18.00	18.00	18.00	Crude, f. o. b. mines.....ton	18.00	19.00	19.00
2.40	2.40	2.40	2.40	Flour for dusting 99½%, 100 lb bags c-1 NY....100 lb.	.....	2.40	2.40
2.50	2.50	2.50	2.50	Heavy bags c-1.....100 lb.	.....	2.50	2.50
3.45	3.45	3.45	3.45	Flowers, 100%, 155 lb bbls c-1 NY.....100 lb.	.....	3.45	3.45
2.85	2.65	2.65	2.65	Roll, bbls 1c-1 NY.....100 lb.	2.65	2.85	2.85
.05½	.05	.05	.05	Sulfur Chloride, red, 700 lb drs wks.....lb.	.05	.05½	.05½
.04½	.03½	.03¾	.03¼	Yellow, 700 lb drs wks.....lb.	.03½	.04½	.04½
.08½	.08	.08	.08	Sulfur Dioxide, 150 lb cyl....lb.	.08	.08½	.08½
.19	.17	.17	.17	Extra, dry, 100 lb cyl.....lb.	.17	.19	.19
.65	.10	.65	.65	Sulfuryl Chloride, 600 lb dr...lb.	.10	.65	.65
.11½	.11	.11	.11	Stainless, 600 lb bbls....lb.	.11	.11½	.11½
.06	.05½	.05	.05	Extract, 450 lb bbls.....lb.	.05½	.06	.06
130.00	130.00	130.00	130.00	Sicily Leaves, 100 lb bg...ton	.....	130.00	130.00
72.00	72.00	80.00	72.00	Ground shipment.....ton	.....	72.00	72.00
60.00	55.00	55.00	55.00	Virginia, 150 lb bags.....ton	55.00	60.00	60.00
15.00	12.00	12.00	12.00	Talc, Crude, 100 lb bgs NY...ton	12.00	15.00	15.00
18.00	16.00	16.00	16.00	Refined, 100 lb bgs NY..ton	16.00	18.00	18.00
35.00	30.00	30.00	30.00	French, 220 lb bags NY...ton	30.00	35.00	35.00
45.00	38.00	38.00	38.00	Refined, white, bags....ton	38.00	45.00	45.00
50.00	40.00	40.00	40.00	Italian, 220 lb bags NY...ton	40.00	50.00	50.00
55.00	50.00	50.00	50.00	Refined, white, bags....ton	50.00	55.00	55.00


TRI-
SODIUM
PHOSPHATE
WATER SOFTENER
INTERNATIONAL AGRICULTURAL CORP'N
61 BROADWAY
NEW YORK, N.Y.
PLANT
Wales. Tennessee
Write us for QUOTATIONS
CLEANING COMPOUND
"Satisfaction at Cleaning Time"


C.C.C
BENZOIC ACID
BENZALDEHYDE
BENZOYL CHLORIDE
BENZOATE OF SODA
VANILLIN
COUMARIN
Shipments supplied promptly from near-by warehouse stocks. Quotations furnished cheerfully on request.
Commonwealth Division
The MATHIESON ALKALI WORKS Inc
250 PARK AVENUE NEW YORK CITY
PHILADELPHIA CHICAGO PROVIDENCE
CHARLOTTE CINCINNATI
WORKS: NIAGARA FALLS, N.Y. SALTVILLE, VA. NEWARK, N.Y.


ALCOHOL!
Pure, Special and
Completely Denatured
National Industrial
Alcohol Co., Inc.
NEW ORLEANS, LA.

NICHOLS COPPER CO.
COPPER SULPHATE
(BLUE VITRIOL)
450LBS.
NEW YORK
NICHOLS COPPER CO.
COPPER SULPHATE
(GRANULATED)
450LBS.
NEW YORK
NICHOLS COPPER CO.
COPPER SULPHATE
(POWDERED)
350LBS.
NEW YORK
TRIANGLE BRAND
Nichols Copper Co.
25 Broad St. New York
TRIANGLE BRAND
58 E. Washington Street, Chicago

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Jan. 1929 $1.028

Corn Oil — An upward turn in the grain market combined with the favorable position of cottonseed has placed this market in strong position during the past month. Tanks of crude at the mills are now quoted at 9c @ 9⅛c lb., an increase of ½c lb. since last quoted. The barrel price on crude is now at 10½c lb., while refined is at 11½c @ 11¾c lb.

Cottonseed Oil — Has been steady and firm, with a constant upward price trend since last reported. Crude oil at the mills is now at 9c lb., marking a ½c lb. advance since last reported. Spot and futures, P. S. Y., are also higher, the former being at 10.45 c lb., and the latter at 10.6c lb. Cottonseed received at the mills August 1 to December 31, 1928 amounted to 4,276,495 tons, according to the Bureau of Census. This compares with 3,933,180 tons during same period of 1927. Crushed (same period) 1928; 2,968,424 tons; 1927, 3,009,511 tons. On hand at mills December 31, 1928, 1,328,703 tons; 1927, 1,012,953 tons. Crude oil on hand August 1, amounted to 20,350,682 pounds; 1927, 16,296,641 pounds. Crude oil produced August 1 to December 31 amounted to 920,255,197 pounds; 1927, 936,662,897 pounds. Crude oil shipped out during same period, 848,886,789 pounds; 1927, 813,296,903 pounds. Crude oil on hand December 31, 133,836, 969 pounds; 1927, 158,834,182 pounds. The figures on refined oil are as follows: on hand August 1, 1928, 335,993,223 pounds; 1927, 378,612,700 pounds; produced August 1 to December 31, 726,918,810 pounds; 1927, 709,964,678 pounds; on hand December 31, 1928, 431,693,697 pounds; 1927, 503,139,695 pounds. Exports of crude oil for four months ended November 30 amounted to 8,665,533 pounds, compared with 11, 562,827 pounds in similar period 1927. Exports of refined oil for same period amounted to 3,484,748 pounds, compared with 3,187,994 pounds in same period of 1927.

Lard Oil — Demand has been light during the past month and prime and extra have declined in price, the former to 15½c lb., and the latter to 13¼c lb.

Linseed Oil — Has been an advance of one point since last reported but the market has been very quiet. Tanks are now at 9.3c lb.; barrels at 10.1c lb. and five barrel lots at 10.5c lb. Proposed tariff revisions seem likely to effect this commodity, and as a result no quotations are being made from May forward. Flax prices in the United States are held firm by the final estimate of 19,321,000 bushels produced in the United States in 1928, compared with 25,847,000 bushels in 1927. This low production, together

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
5.10&10	4.65&10	4.85	4.00	Tankage Ground NY.....unit	..... 4.75&10	4.75&10	4.75&10
4.80&10	3.90&10	5.25	3.75	High grade f.o.b. Chicago.unit	..... 4.80&10	4.80&10	4.80&10
5.00&10	4.60&10	5.25	4.00	South American cif.....unit	..... 4.80&10	4.80&10	4.80&10
.05	.04½	.04½	.04½	Tapioca Flour, high grade bgs.lb.	.04½	.05	.05	.04½
.04	.03¾	.03¾	.03¾	Medium grade, bags.....lb.	.03¾	.04	.04	.03¾
.27	.26	.26	.26	Tar Acid Oil, 15%,drums....gal.	.26	.27	.27	.26
.30	.29	.29	.29	25% drums.....gal.	.29	.30	.30	.29
.08	.07	.07	.07	Coke Oven, tanks wks.....lb.	.07	.08	.08	.07
13.50	13.50	16.00	13.50	Kiln Burnt, bbl.....bbl.	.....	13.50	13.50	13.50
15.00	13.50	18.50	13.50	Retort, bbls.....bbl.	13.50	15.00	15.00	13.50
1.75	1.15	1.15	1.15	Terra Alba Amer. No. 1, bgs or bbls mills.....100 lb.	1.15	1.75	1.75	1.15
2.00	1.50	1.50	1.50	No. 2 bags or bbls...100 lb.	1.50	2.00	2.00	1.50
.02½	.02	2.00	2.00	Imported bags.....100 lb.	.02	.02½	.02½	.02
.....	.....	.....	.....	Tetrachlorethane, 50 gal dr...lb.	.09	.09½		
.20	.20	.20	.20	Tetralene, 50 gal drs wks.....lb.	.....	.20	.20	.20
.24	.22	.22	.22	Thiocarbanilid, 170 lb bbl....lb.	.22	.24	.24	.22
.17½	.14½	.20½	.17½	Tin Bichloride, 50% soln, 100 lb bbls wks.....lb.	.....	.14½	.14½	.14½
.41½	.36½	.48	.41½	Crystals, 500 lb bbls wks...lb.	.....	.36½	.36½	.36½
.58	.48	.71½	.58	Metal Straits NY.....lb.	.....	.48	.48	.48
.75	.53	.75	.70	Oxide, 300 lb bbls wks.....lb.	.....	.53	.53	.53
.35½	.30½	.48	.35½	Tetrachloride, 100 lb drs wks .....lb.	.....	.30½	.30½	.30½
.40	.40	.40	.40	Titanium Oxide, 200 lb bbl....lb.	.....	.40	.40	.40
.14	.13½	.13½	.13½	Pigment, bbls wks.....lb.	.13½	.14	.14	.13½
.45	.40	.40	.40	Toluene, 110 gal drs wks.....lb.	.....	.45	.45	.45
.45	.35	.35	.35	8000 gal tank cars wks.....lb.	.....	.40	.40	.40
.94	.90	.90	.90	Toluidine, 350 lb bbls.....lb.	.90	.94	.94	.90
.32	.31	.31	.31	Mixed, 900 lb drs wks.....lb.	.31	.32	.32	.31
.90	.85	.85	.85	Toner Lithol, red, bbls.....lb.	.85	.90	.90	.85
.80	.70	.75	.75	Para, red, bbls.....lb.	.70	.75	.75	.70
1.80	1.70	1.75	1.75	Toluidine.....lb.	1.50	1.55	1.55	1.50
3.90	3.60	3.60	3.60	Triacetin, 50 gal drs wks.....lb.	3.60	3.90	3.90	3.60
.....	.....	.....	.....	Trichlorethylene, 50 gal dr...lb.	.10	.10½		
.....	.....	.....	.....	Triethanolamine, 50 gal drs...lb.	.55	.60	.60	.55
.50	.36	.36	.36	Tricresyl Phosphate, drs.....lb.	.36	.50	.50	.36
.73	.69	.70	.69	Triphenylguanidine.....lb.	.69	.73	.73	.69
.75	.70	.70	.70	Phosphate, drums.....lb.	.70	.75	.75	.70
3.00	2.50	2.50	2.50	Tripoli, 500 lb bbls.....100 lb.	2.50	3.00	3.00	2.50
.66½	.50½	.86	.53½	Turpentine Spirits, bbls.....gal.	.59½	.65	.65	.59½
.59	.46	.76	.46	Wood Steam dist. bbls....gal.	.....	.57	.57	.57
.20	.18	.18	.18	Urea, pure, 112 lb cases.....lb.	.18	.20	.20	.18
76.00	55.00	70.00	66.00	Valonia Beard, 42%, tannin bags.....ton	.....	55.00	55.00	55.00
55.00	58 00	49.50	39.00	Cups, 30-31% tannin.....ton	.....	Nom.	Nom.	.....
64.00	45.00	68.00	43.00	Mixture, bark, bags.....ton	.....	43.00	43.00	43.00
2.10	1.75	1.95	1.55	Vermillion, English, kegs....lb..	2.00	2.05	2.05	2.00
.....	.....	.....	.....	Vinyl Chloride, 16 lb cyl.....lb.	.....	1.00	1.00	1.00
76.00	49.75	59.00	49.50	Wattle Bark, bags.....ton	.....	49.75	49.75	49.75
.06½	.05½	.05½	.05½	Extract 55%, double bags ex-dock.....lb.	.....	.06½	.06½	.06½
1.25	1.25	1.25	1.25	Whiting, 200 lb bags, c-1 wks .....100 lb.	.....	1.25	1.25	1.25
13.00	13.00	13.00	13.00	Alba, bags c-1 NY.....ton	.....	13.00	13.00	13.00
1.35	1.35	1.35	1.35	Gilders, bags c-1 NY...100 lb.	.....	1.35	1.35	1.35

Zinc

.05½	5.85	.06½	.06½	Zinc Ammonium Chloride powd., 400 lb bbls.....lb.	5.25	5.75	5.75	5.25
.10	.09½	.09½	.09½	Carbonate Tech, bbls NY..lb.	.09½	.10	.10	.09½
.06	.06	.06	.06	Chloride Fused, 600 lb drs. wks.....lb.	.05½	.06	.06	.05½
.06½	.06½	.06½	.06½	Gran., 500 lb bbls wks.....lb.	.06½	.06½	.06½	.06½
3.00	3.00	3.00	3.00	Soln 50%, tanks wks...100 lb.	.....	3.00	3.00	3.00
.41	.40	.40	.40	Cyanide, 100 lb drums.....lb.	.40	.41	.41	.40
				Dithiofuroate, 100 lb dr....lb.	1.00	.....		
.09	.09	.09	.09	Dust, 500 lb bbls c-1 wks...lb.	.08½	.08¾	.08¾	.08¾
6.40	6.07½	7.35	6.40	Metal, high grade slabs c-1 NY.....100 lb.	.....	6.45	6.45	6.45¾
.07¾	.07¾	.07¾	.07¾	Oxide, American bags wks..lb.	.07¾	.07¾	.07¾	.07
.12¾	.10¾	.10¾	.10¾	French, 300 lb bbls wks...lb.	.09¾	.11¾	.11¾	.09¾
.....	.....	.....	.....	Perborate, 100 lb drs.....lb.	.....	1.25	1.25	1.25
.....	.....	.....	.....	Peroxide, 100 lb drs.....lb.	.....	1.25	1.25	1.25
.....	.....	.....	.....	Stearate, 50 lb bbls.....lb.	.25	.26		
.03¾	.03½	.03½	.03	Sulfate, 400 bbl wks.....lb.	.03½	.03¾	.03¾	.03½
.32	.30	.30	.30	Sulfide, 500 lb bbls.....lb.	.30	.32	.32	.30
.30	.29	.29	.29	Sulfocarbolate, 100 lb keg..lb.	.29	.30	.30	.29
.32	.32	.38	.32	Xylene, 10 deg tanks wks....lb.	.....	.33	.33	.33
.32	.30	.36	.30	Commercial, tanks wks....lb.	.30	.32	.32	.30
.38	.38	.35	.35	Xylidine, crude.....lb.	.....	.38	.38	.38
.03	.02½	.02½	.02½	Zirconium Oxide, Nat. kegs..lb.	.02½	.03	.03	.02½
.50	.45	.45	.45	Pure kegs.....lb.	.45	.50	.50	.45
.10	.08	.08½	.08	Semi-refined kegs.....lb.	.08	.10	.10	.08

Oils and Fats

.14½	.13	.14	.13	Castor, No. 1, 400 lb bbls.....lb.	.13	.13½	.13½	.13
.14	.12½	.14	.12½	No. 3, 400 lb bbls.....lb.	.12½	.13	.13	.12½
.17	.14	.18	.17	Blown, 400 lb bbls.....lb.	.14	.15	.15	.14
.17	.14½	.31	.13½	China Wood, bbls spot NY...lb.	.15½	.15½	.15½	.15
.14¾	.14¾	.18	.12½	Tanks, spot NY.....lb.	....	Nom.	Nom.	.....
.14¾	.12½	.....	.....	Coast tanks, Jan.....lb.	.14½	.14¾	.14¾	.14½
.11½	.10½	.12	.12	Cocoanut, edible, bbls NY....lb.	.....	.10½	.10½	.10½
.10	.09½	.09¾	.09	Ceylon, 375 lb bbls NY....lb.	.09½	.09½	.09½	.09½
.09	.08½	.08¾	.08	8000 gal tanks NY.....lb.	.08¾	.08½	.08¾	.08½
.10½	.09½	.10½	.09½	Cochin, 375 lb bbls NY....lb.	.....	.10	.10	.10
.09½	.08¾	.10	.08½	Tanks NY.....lb.	.09½	.09½	.09½	.09½
.10	.08½	.09¾	.08½	Manila, bbls NY.....lb.	.....	.09½	.09½	.09½
.08¾	.08	.08¾	.08½	Tanks NY.....lb.	.08½	.08¾	.08¾	.08½
.08½	.07½	.08¼	.08	Tanks, Pacific Coast.....lb.	.07½	.08	.08	.07½

... For ...

Dependable Supplies

Immediate Delivery

Reasonable Prices

MECHLING'S

Bisulphite of Soda
Silicate of Soda
Hyposulphite of Soda
Sulphite of Soda
Sal Soda Epsom Salts
Causticized Ash

Spraying and Dusting Materials

MECHLING BROS. CHEMICAL COMPANY

PHILADELPHIA, PA. CAMDEN, N. J. BOSTON, MASS.

Alfred W. Jenkins Schuyler L. Parsons

Parsons & Petit

ESTABLISHED 1857
63 BEAVER STREET
NEW YORK CITY

Selling Agents

The Freeport Sulphur Co.
IN THE UNITED STATES AND CANADA

The Sulphur Export Corp.
IN MEXICO

The Salzbergwerk Neu-Stassfurt
IN UNITED STATES
FOR CARBONATE OF POTASH

D. Correale Santacroce
REGGIO, CALABRIA
BERGAMOT, LEMON AND ORANGE OILS

Distributors for

The Diamond Alkali Co.

Fertilizer Materials of All Kinds
Soap and Powder Manufacturers Supplies

Cream of Tartar
99½—100% Pure
U. S. P.

Tartaric Acid
U. S. P.

POWDERED *CRYSTALS*
GRANULATED

TARTAR CHEMICAL WORKS
Royal Baking Powder Co.
100 East 42nd Street
New York

Largest Manufacturers in the United States

BORAX *and* BORIC ACID

Guaranteed 99½ to 100% Pure
Crystal - Granulated - Powdered
REFINED and U. S. P.

Borax Glass
Anhydrous Boric Acid
Manganese Borate
Ammonium Borate

Sulfur
Refined - All Grades

PACIFIC COAST BORAX CO.
100 William St., New York
Chicago Los Angeles

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1829 $1.047 - Jan. 1929 $1.028

with low stocks in the United States and Canada, offsets the influence of a record crop in Argentina, according to the United States Department of Agriculture. Unofficial reports indicate that Argentina's production is well above that of last year, though the carryover of old-crop flax in Argentina is apparently small. Commercial stocks in flax in the United States and Canada on December 29 were reported at only 2,854,000 bushels, compared with 7,034,000 bushels in December, 1927. Exports of flaxseed from Argentina and India up to December 15 and from Canada up to November 30 amounted to 23,452,000 bushels, compared with 24, 241,000 bushels for the corresponding period of the preceding crop year. Imports of flaxseed into the United States and into the United Kingdom from September 1 to November 30 were 7,051,000 bushels, compared with 8,095,000 bushels in the corresponding period of 1927. Continental Europe continues to import flaxseed in larger quantities than last year.

Olive Oil — Supplies of foots have become very scarce and as a result prices have continued to advance. Quotations are now at 11¼c @ 11½c lb. for supplies on spot. Futures are lower but it is expected that the same condition will be existing when these shipments arrive so that it is thought that there will be no easing of the spot market until after March 1. The production of olive oil in the Mediterranean region for 1928-1929 is expected to be considerably below the large output of 1927-1928, and may be below the average of 1921-1925, according to the Department of Agriculture. The probable Mediterranean production this season is not expected to be much above 1,224,000,000 pounds compared with a 1927 production of 2,107,000,000 pounds, and is below the output in 1926, which amounted to 1,281,000,000 pounds and was considered to be very short. The great shortage is due to the large decrease in the crops of Spain and Portugal following the extremely large production in these countries in 1927. A slight decrease is also expected in the output of France, but most other countries report good conditions and probably increases in production.

Palm Oil — Although shipments are considerably lower in price, the spot market continues strong with continued high prices. Lagos is at 9c lb. and Niger at 8½c lb.

Red Oil — Has been in very good demand and considerable strength in the raw material market has led to higher prices during the past month. Distilled in barrels is at 10⅝c @ 11⅛c lb. and in tanks at 9¾c lb.

1928 High	1928 Low	1927 High	1927 Low		Current Market	1929 High	1929 Low
				Cod, Newfoundland, 50 gal bbls			
.69	.63	.66	.63	.....gal.	.63	.64	.64	.63
.63	.60	.59	.59	Tanks NY.....lb.	.....	.60	.60	.60
				Cod Liver see Chemicals.....			
.06½	.05½	.06	.06	Copra, bags.....lb.	.....	.05½	.05½	.05½
.11	.10	.11	.07	Corn, crude, bbls NY.....lb.	.....	.10½	.10½	.10½
.10	.08¾	.09¼	.07	Tanks, mills.....lb.	.09	.09	.09¼	.09
.12½	.11¾	.14	.10½	Refined, 375 lb bbls NY....lb.	.11½	.11¾	.11¾	.11¾
.11½	.10¾	.12	.11	Tanks.....lb.	.....	.10¼	.10¼	.10¼
.09½	.07¾	.09½	.06½	Cottonseed, crude, mill.....lb.	.....	.09	.09	.09
10.65	.09¼	.11½	.08 1/5	PSY, 100 lb bbls spot.....lb.	.....	.1045	10.45	10.45
10.75	.09½	.....	.....	Feb.—Apr.....lb.	.....	.1060	10.60	10.60
				Degras, American, 50 gal bbls			
.05	.04½	.04½	.04½	NY.....lb.	.04½	.05	.05	.04½
.05¾	.04½	.04½	do	English, brown, bbls NY....lb.	.....	.05¾	.05¾	.05¾
.05¼	.05¼	.05¼	.05¼	Light, bbls NY.....lb.	.....	.05¼	.05¼	.05¼
				Greases				
.08½	.07	.07½	.06	Greases, Brown.....lb.	.....	.08½	.08½	.08½
.08½	.07	.08	.06½	Yellow.....lb.	.08¼	.08¼	.08¾	.08¼
.11	.09½	.10¾	.08¼	White, choice bbls NY.....lb.	.....	.11	.11	.11
.42½	.40	.....	.....	Herring, Coast, Tanks.....gal.	.....	Nom.		
Nom.	.09½	.09½	.09	Horse, bbls.....lb.	.09½	Nom.	Nom.	.....
.16½	.15½	.16¾	.14¾	Lard Oil, edible, prime.....lb.	.....	.15½	.15½	.15½
.13½	.12	.13¾	.10¾	Extra, bbls.....lb.	.....	.13¼	.13¼	.13¼
.13	.11	.12½	.10½	Extra No. 1, bbls.....lb.	.....	.13	.13	.13
10.8	10.0	.11 4/5	.10 2/5	Linseed, Raw, five bbl lots...lb.	.....	.105	1.05	1.05
10.4	9.6	.11 9/10	.09 6/10	Bbls c-l spot.....lb.	.....	.101	1.01	1.01
9.6	8.8	.10½	.09	Tanks.....lb.	.....	.093	.093	.093
.09½	.09½	.09¾	.09¾	Lumbang, Coast.....lb.	.....	.09¾	.09¾	.09¾
.48	.40	.47½	.44	Menhaden Tanks, Baltimore.gal.	.....	.52	.52	.52
.09	.09	.90	.10	Blown, bbls NY.....lb.	.....	.09	.09	.09
.70	.67	.70	.67	Extra, bleached, bbls NY..gal.	.....	.70	.70	.70
.64	.63	.66	.63	Ligh, pressed, bbls NY....gal.	.63	.64	.64	.63
.67	.66	.66	.69	Yellow, pressed, bbls NY..gal.	.66	.67	.67	.66
				Mineral Oil, white, 50 gal bbls				
.60	.40	.....	.....	.....gal.	.40	.60	.60	.40
1.00	.95	.....	.....	Russian, gal.....gal.	.95	1.00	1.00	.95
.19	.18½	.18¾	.14½	Neatsfoot, CT, 20° bbls NY..lb.	.....	.19	.19	.19
.13½	.12	.13½	.10½	Extra, bbls NY.....lb.	.....	.13¾	.13¼	.13¼
.16¼	.15¼	.16¾	.12¼	Pure, bbls NY.....lb.	.....	.15¾	.15¼	.15¼
.17¾	.11¾	.18½	.10	Oleo, No. 1, bbls NY.....lb.	.....	.11½	.11½	.11½
.15½	.11	.17	.08¾	No. 2, bbls NY.....lb.	.....	.11¼	.11¼	.11¼
.14	.10	.14	.08½	No. 3, bbls NY.....lb.	.....	.10¼	.10¼	.10¼
1.40	1.18	1.75	1.40	Olive, denatured, bbls NY...gal.	1.28	1.30	1.30	1.28
2.00	1.75	2.00	2.45	Edible, bbls NY.....gal.	1.95	2.00	2.00	1.95
.11	.09¾	.10½	.08¾	Foots, bbls NY.....lb.	.11½	.11½	.11½	.11½
.09¼	.08½	.09½	.09	Palm, Kernel, Casks.....lb.	.08¾	.09	.09	.08¾
.09½	.07¾	.08¾	.07½	Lagos, 1500 lb casks.....lb.	.....	.09	.09	.09
.08¾	.07	.08¼	.07¼	Niger, Casks.....lb.	.....	.08½	.08½	.08½
.12½	.12	.14½	.12	Peanut, crude, bbls NY.....lb.	.....	Nom.	Nom.	.....
.17	.14½	.15½	.14¼	Refined, bbls NY.....lb.	.14½	.15	.15	.14½
.21	.13	.16½	.12½	Perilla, bbls NY.....lb.	.....	.20	.20	.20
.15½	.10½	.14½	.10	Tanks, Coast.....lb.	.....	.14½	.14½	.14½
1.75	1.70	1.70	1.70	Poppyseed, bbls NY.....gal.	1.70	1.75	1.75	1.70
1.06	1.01	1.05	1.00	Rapeseed, blown, bbls NY...gal.	..4..	1.04	1.04	1.04
.92	.83	.90	.82	English, drms. NY.....gal.	.85	.87	.87	.85
.90	.81	.85	.76	Japanese, drms. NY.....gal.	.84	.86	.86	.84
.10⅜	.09¼	.10	.09	Red, Distilled, bbls.....lb.	.10⅜	.10⅜	.10⅜	.10⅜
.09¼	.08	.09½	.08¼	Tanks.....lb.	.....	.09¼	.09¼	.09¼
.50	.42	.50	.50	Salmon, Coast, 8000 gal tks..gal.	.42	.44	.44	.42
.50	.41	.47	.43	Sardine, Pacific Coast tks...gal.	.....	.51	.51	.51
.13½	.12	.13	.11½	Sesame, edible, yellow, dos...lb.	.11½	.12	.12	.11½
.15	.12½	.14	.14	White, dos.....lb.	.12¼	.12½	.12½	.12¼
.40	.40¼	.40	.40	Sod, bbls NY.....gal..	.....	.40	.40	.40
.....	.....	.09¾	.09¼	Soy Bean, crude.....				
.09¾	.09	.....	.....	Pacific Coast, tanks.....lb.	.....	.10	.10	.10
.12½	.12	.12¼	.10¾	Soy Bean, crude, bbls NY....lb.	.....	.12¼	.12¼	.12¼
.10⅜	.10½	.11	.10½	Tanks NY.....lb.	.....	.10⅜	.10⅜	.10¼
.13¾	.13¼	.13	.12	Refined, bbls NY.....lb.	.13¼	.13¼	.13½	.13¼
.85	.84	.85	.84	Sperm, 38° CT, bleached, bbls NY.....gal.	.84	.85	.85	.84
.80	.79	.82	.79	45° CT, bleached, bbls NY gal.	.79	.80	.80	.79
.18½	.11	.13¼	.11¼	Stearic Acid, double pressed dist bags.....lb.	.18	.18½	.18½	.18
.19	.11½	.14	.11½	Double pressed saponified bags .....lb.	.18½	.19	.19	.18½
.20½	.13½	.15¼	.13¼	Triple, pressed dist bags..lb	.20	.20½	20½	.20
.12½	.09½	.13	.08¾	Stearine, Oleo, bbls.....lb.	.11¼	.11½	.11½	.11¼
.09½	.08¼	.09	.07½	Tallow City, extra loose.....lb.	.09	.09½	.09½	.09
.10½	.09½	.11	.08¼	Edible, tierces.....lb.	.10½	.10½	.10½	.10½
.12¼	.11¼	.10½	.08½	Tallow Oil, Bbls, c-1 NY...lb.	.....	.12	.12	.12
.11¼	.10½	.12¼	.10	Acidless, tanks NY.....lb.	.....	.11	.11	.11
Nom.	.08	.08½	.07¼	Vegetable, Coast mats.....lb.	.08	Nom.	Nom.	.08
.11	.....	.11	.11	Turkey Red, single bbls.....lb.	.11	.12	.12	.11
.16	.14	.14	.14	Double, bbls.....lb.	.14	.16	.16	.14
.80	.78	.78	.78	Whale, bleached winter, bbls NY.....gal.	.78	.80	.80	.78
.82	.80	.80	.80	Extra, bleached, bbls NY..gal.	.80	.82	.82	.80
.78	.76	.76	.76	Nat. winter, bbls NY.....gal.	.76	.78	.78	.76

For Platers, Farmers, Pyrotechnic and Paint Manufacturers

COPPER CARBONATE

Pure, Precipitated

Our prices will interest users of this product.
Let us know your requirements.

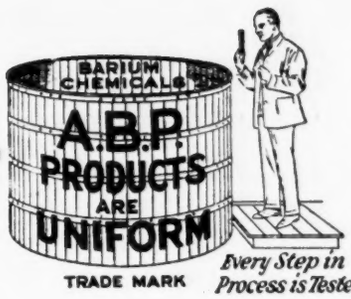
Manufacturers for Seventy-two Years

COOPER'S CERTIFIED CHEMICALS

The sign of well made chemicals

Charles Cooper & Co.
192 Worth Street
New York, N. Y.

Established 1857 — Works: Newark, N. J.



Every Step in Process is Tested

Barium Carbonate

Barium Chloride

Barium Sulphide
(Black Ash)

Iron Oxide
(Venetian Red)

ALTON BARIUM PRODUCTS CO.,
ALTON, ILL.

Fused 60/62

Sodium Sulphide Strips

Barium Reduction Corp.
CHARLESTON, W. VA.

Model

Here You Have It
The Latest Model
Bradley
STENCIL MACHINE

Graduated Table, Handle Adjustable to two positions, Rapid Stroke and Other Features. Cuts ⅛" and ¼" Letters.

Our GIANT MACHINES Cut 1¼" and 1½" Letters for Export Shipments.

Bradley Oil Board and Stencil Papers.
Bradley's Two-In-One Stencil and Marking Ink.
The Bradley Ball Stencil and Marking Pot.

Write for Samples and Prices

A. J. BRADLEY MFG. CO.
102 BEEKMAN STREET NEW YORK

C J W Co

COPPER CARBONATE

Heavy or Light with color to match sample.
In 5 lbs. packages or carloads.
Samples on request.

This product is our own manufacture

Cable Address
Fluorine

Telephone
Greenpoint 3090

JOHN C. WIARDA & CO.
INCORPORATED
262 FREEMAN ST. BROOKLYN, N.Y.

HOWARD B. BISHOP, President

CROTON CHEMICAL CORP. EST. 1836

Trade Mark

Double Refined U. S. P.
SALTPETRE
NITRATE of SODA

U. S. P. and Technical
BORAX
BORIC ACID

CROTON CHEMICAL CORP.
14 Cedar Street - New York
Telephone John 1426

Local Reports *from our Correspondents at the Principal Consuming Centers of Industrial Chemicals*

California

THE BRAUN CORPORATION
Los Angeles **Calif.**
Chemicals for all Industries
QUICKSILVER
CYANIDE
BORAX
ACIDS & ALKALIES

Illinois

CLARENCE MORGAN & CO.
INDUSTRIAL CHEMICALS
355 W. Ontario Street,
CHICAGO
Phone Superior 8870

DEPENDABLE SERVICE
Benner Chemical Company
203 South La Salle Street, Chicago, Ill.
Soda Ash, Caustic Soda, Neutral Soda, Washing Soda, Cleaner and Cleanser, Bicarbonate of Soda, Tri Sodium, Phosphate, Oxalic Acid
Address All Communications to Main Office

SERVICE QUALITY MERCO
STANDARD CHEMICALS
FOR ALL PURPOSES
MERCHANTS CHEMICAL CO., Inc.
1300-16 S. Canal St., Chicago, Ill.
Branch Offices and Warehouses
MILWAUKEE MINNEAPOLIS
Sales Agents For
MICHIGAN ALKALI CO.
"WYANDOTTE" PRODUCTS

LOS ANGELES

There are several chemical manufacturers building plants in the Southwest to take care of the ever increasing demand for chemicals due to growth of the industries. Prices in general remain firm. Mercury is active due to independent producers. Business outlook seems very favorable for January and February.

BOSTON

General business is rather quiet, as it usually is during the month of January. The woolen business remains rather quiet while the cotton business, particularly among the textile printers, continues to be exceptionally good. The shoe and leather industry is very quiet.

The prices of heavy chemicals remain firm at the advanced prices named the latter part of the year before contracts for 1929 were written.

We know of no year when contracts were accepted by buyers any more readily than those made to cover this year's requirements, which makes a very hopeful outlook for 1929.

Collections generally are very good.

KANSAS CITY

The new year is starting off in an active fashion in the Middle Western Territory as far as chemical sales are concerned.

Items to the feed mixers are in good demand. The meat packers have been buying steadily and regularly. Petroleum refiners are active as are also all flour millers. Paint trade rather dull, due to seasonably bad weather. This is true also of stock powder manufacturers.

Contracts are being placed in good volume on copper sulfate for spring delivery. Alcohol is moving in fair volume, due to a cold snap but buyers are taking only actual needs. The demand for actual delivery on naphthalene has begun and the call for cod liver oil is good.

Collections this month have been considerably slower.

SAINT LOUIS

Immediately after the New Year, there was a rush of orders necessitated by abnormally low stocks prior to inventory. After the first week of January business settled down to a routine run, running slightly better than in 1928. There have been no price changes of importance, the market continuing firm in all respects. At this time chemical factors are optimistic and are looking for a big business with firm markets well sustained. Collections are not particularly good in spite of the fact, that most houses are putting on campaigns in an endeavor to liquidate last year's accounts.

Massachusetts

Rogers & McClellan
New England Agents
Seaboard Chemical Co.
Denatured Alcohol Wood Alcohol
Methyl Acetone
Franco-American Chemical Wks.
Amyl Acetate Pyroxylin Solutions
Atlantic Carbonic Co.
Glauber Salts Bisulphite Soda
Penn Chemical Works
Lye
Battelle & Renwick
Sulphur Saltpetre

DOE & INGALLS, INC.
196 MILK STREET
BOSTON
Hancock 8540
INDUSTRIAL CHEMICALS
FOR MANUFACTURERS

CEMENTS
Waterproofing
HOWE & FRENCH
Established 1834
99 Broad St., Boston, Mass.

Michigan

ACIDS
CHEMICALS
DYESTUFFS
for all industrial purposes
Eaton-Clark Company
Est. 1838
1490 Franklin St.,
DETROIT, MICH.
Branch: Windsor, Ont.

Missouri

THOMPSON-HAYWARD CHEMICAL CO.
Kansas City St. Louis
Des Moines, Iowa Houston, Tex.
New Orleans Omaha, Nebr.
CHEMICALS, OILS & DRUGS
Manufacturers Sales Representatives to the Jobbing and Manufacturing Trade
Warehouse Stocks in
The Middle West and Southwest

Local Reports

from our Correspondents at the Principal Consuming Centers of Industrial Chemicals

Missouri---(cont.)

G. S. ROBINS & CO.
"Chemicals With Service"
310-316 S. Commercial Street,
ST. LOUIS
Br. Off.—1408 Sanger Avenue
DALLAS, TEX.
CHEMISTS
Distributing Chemicals to the Industrial and Jobbing Trades
MATHIESON
Liquid Chlorine-Caustic Soda-Soda Ash
Bleaching Powder-Anhydrous Ammonia
Modified Virginia Soda-Bicarbonate of Soda

New Jersey

MINERAL ACIDS
INDUSTRIAL CHEMICALS
ALCOHOLS - SOLVENTS
AMERICAN
OIL & SUPPLY CO.,
238 Wilson Ave., Newark, N. J.
289 N. Willow St., Trenton, N. J.

New York

Western New York Headquarters for
CHEMICALS and
RAW MATERIALS
ROLLS CHEMICAL COMPANY
Ellicott Sq. Bldg., Buffalo

DANITRA BRAND
Double Refined
SALTPETRE and
NITRATE OF SODA
U. S. P.
Manufactured by
DAVIES NITRATE CO., INC.
57-59 Commerce St., Brooklyn, N. Y.

NEWARK

In colors and chemicals most of the concerns in this territory report that December was considerably better than December of 1927, although one reports business is not as good, but for January, February and March all seem to feel that conditions are going to be good, that prices are firm and that a very satisfactory volume of business will be transacted. Collections are good with some and only fair with others.

Leather—December 1928 shows a substantial increase in volume over December 1927 and with a number December 1928 is considerably better than November 1928, but not in all instances. The year as a whole has been very good and the trade does not seem fearful of the outlook for January and February 1929. There is a general admission, however, that the margin of profits is lower this year than the average. Collections seem good.

Textiles—In the silk trade, particularly in the dyeing industry things seem to be looking up—this month over December, but for the most part there is a very sluggish situation and very little to look forward to, as there seems to be a greater capacity and supply than the market can comfortably absorb.

Chemical prices are firm and there seems to be a decided tendency, on the part of houses heretofore cutting prices to secure business, to use a little more common sense and sell only where a profit is involved. There is great room for improvement still in this phase of marketing.

CLEVELAND

Business in the paint and varnish industry was rather slow in picking up after the Holiday dullness although toward the end of this month it has become somewhat more active.

Lacquer manufacturers report business rather quiet.

The demand for Toluol which was very great during the latter part of the year, has quieted down somewhat but as soon as the demand for lacquer starts again there will probably be considerable scarcity of Toluol and Xylol.

The rubber manufacturers are running along in good shape and look forward to a record breaking year.

Auto accessory and steel manufacturers continue to operate practically at capacity and they are booked ahead for some time to come.

Ohio

COLORS
LACQUER SOLVENTS
TOLUOL BENZOL
ALCOHOL GLYCERINE
Henry L. Grund Co.
Bulkley Bldg.
CLEVELAND, OHIO

OILS
HYDROXY TEXTILE
SULPHONATED CASTOR
50 and 75%
All Sulphonated Oils and Finishing Compounds
AMMONIA ACETIC ACID
FORMALDEHYDE
Kali Manufacturing Co.
1409 No. Hope St.
PHILADELPHIA, PA.

Naphthalene Epsom Salts
We carry warehouse stocks of domestic and imported industrial chemicals
LABORATORY SERVICE
Inquiries and Orders Solicited
Alex C. Fergusson Co.
23 S. Orianna St.
PHILADELPHIA
Since 1855
Chemicals, Glycerin, Blanc Fixe

Rhode Island

GEORGE
MANN
& CO., INC.
Providence, Rhode Island
SODA ASH
CAUSTIC SODA
SODIUM SULFIDE
CALCIUM CHLORIDE
AMMONIA
STEARIC ACID

Cresylic Acid
All Grades
Creosote Oils
Specially prepared for disinfectant manufacturers
Cresol, U. S. P. *Phenol, U. S. P.*
Coal-Tar Products
WM. E. JORDAN & BROTHER
2592 ATLANTIC AVE. BROOKLYN, N.Y.
Mechanics Bank Bldg. Glenmore 7318-7319

ALCOHOL
PURE, COMPLETELY DENATURED AND SPECIALLY DENATURED FOR ALL PURPOSES
Carried in warehouse in twelve large cities
THE FEDERAL PRODUCTS CO.
CINCINNATI, OHIO
(Send for copy of our Red Booklet—Tenth Edition)

Cooper's Combined
LACQUER
A paint, A varnish, A lacquer
Brush, Spray or Dip
The three products in one
7—Primary Colors—7
From which all shades may be made.
COOPER'S CERTIFIED CHEMICALS
Charles Cooper & Co.
192 Worth Street
New York, N. Y.
The sign of well made chemicals Established 1857 Works: Newark, N. J.

STEARIC ACID **RED OIL**
All Grades
Saponified and Distilled
CANDLES
A. GROSS & CO.
Manufacturers Since 1837
Sales Office
BRADY BLDG. 90 WEST STREET NEW YORK
Factories at Newark, N. J. and Baltimore, Md.

DIRECT IMPORTERS of
Aluminum Fluoride
Ammonium Bi-Fluoride
Barium Fluoride
Sodium Fluoride
Sodium Acid Fluoride
JUNGMANN & CO.
INCORPORATED
5 Desbrosses Street NEW YORK, N. Y.

Sal Ammoniac **Zinc Chloride**
Zinc Ammonia Chloride
Cresoyle: hydrocarbon compound saturating wood without any application of heat and pressure, by merely dipping it into an open tank. Usual equipment for hot vacuum pressure creosote process can easily be adapted for cresoyle process. Economy 50%.
Samples and C.I.F. prices on request
P. STACQUEZ
12 rue Jenneval Antwerp, Belgium
Manufacturer's Agent

STEARIC ACID **RED OIL**
GLYCERINE **ALCOHOL**
SULPHONATED OILS
SOFTENERS **DYESTUFFS**
J. U. STARKWEATHER CO.
705 Hospital Trust Bldg.
Providence, R. I.
Telephone Gaspee 0977

SYNTHETIC NITROGEN
Leunasalpeter *Nitrophoska*
Sulfate of Ammonia *Nitrate of Potash*
Calurea *Calcium Nitrate*
A Form for Every Need
AMMONIA · NITRATE · ORGANIC
SYNTHETIC NITROGEN PRODUCTS CORPORATION
285 Madison Avenue, New York, N. Y.
Wire for Quotations
"It's Nitrogen From the Air"

ADVERTISING PAGES REMOVED

Index To Advertisers

Kalbfleisch Corp., The, New York City....117
Kali Mfg., Co., Philadelphia, Pa....219
Kessler Chemical Co., Orange, N. J....201
Klipstein & Sons, E. C., New York City....199
Kuttroff, Pickhardt & Co., New York City....188

Lewis, John D., Providence, R. I....211

Mallinckrodt Chemical Works, St. Louis, Mo....207
Mann & Co. G., Providence, R. I....219
Mathieson Alkali Works, New York City....115, 213
Mechling Bros. Chemical Co., Camden, N. J....215
Merchants Chemical Co., Inc., Chicago, Ill....218
Merck & Co., Rahway, N. J....186
Merrimac Chemical Co., Boston Mass....121
Michigan Alkali Co., New York City....126
Monsanto Chemical Works, St. Louis, Mo....129
Morgan & Co., Clarence, Chicago, Ill....218
Mutual Chemical Co., New York....125

National Aniline & Chemical Co., New York City....211
National Industrial Alcohol Co., Inc., New Orleans....213
N. Y. Quinine & Chemical Works, Brooklyn, N. Y....
....Insert facing page 192
Newport Chemical Works, Passaic, N. J....223
Niacet Chemicals Corp., Niagara Falls, N. Y.,....201
Nichols Copper Co., New York....213

Olean Sales Corp., Olean, N. Y....199

Pacific Coast Borax Co., New York City....215
Parsons & Petit, New York City....215
Pennsylvania Salt Mfg. Co., Philadelphia, Pa....188

Rhodia Chemical Co., New York City....197
Robins & Co., G. S., St. Louis, Mo....218
Roessler & Hasslacher Chemical Co., New York City...Cover 4
Rogers & McClellan, Boston, Mass....219
Rolls Chemical Co., Buffalo, N. Y....219

Selden Co., The, Pittsburgh, Pa....118
Shriver, T. Harrison, N. J....164
Solvay Sales Corporation, New York City....Cover 2
Southern Agricultural Chemical Corp., Atlanta, Ga....207
Stacquez, P., Antwerp, Belgium....220
Starkweather Co., J. U., Providence, R. I....220
Synthetic Nitrogen Products Corp., New York City....220

Tartar Chemical Works, New York City....215
Thompson-Hayward Chemical Co., Kansas City, Mo....218
Trageser Steam Copper Works, John, Maspeth, L. I., N. Y..174
Turner & Co., Joseph New York....205

U. S. Industrial Alcohol Co., New York City....124

Victor Chemical Works, Chicago, Ill....222

Warner Chemical Co., New York....Insert facing page 177
Wiarda & Co., Inc., John C., Brooklyn, N. Y....217
Wilckes, Martin, Wilckes, New York, N. Y....209
Winkler & Bro., Isaac, Cincinnati, O....203
Wishnick-Tumpeer, Inc., New York City..Insert facing page 176
Wood Products Co., Buffalo, N. Y....174

THE NEWPORT PRODUCTS

include . . .

DYES
of all classes

INTERMEDIATES
of superior quality

SOLVENTS
produced by hydrogenation

DETERGENTS
utilizing their valuable properties

and a number of Specialties — such as FLEXO FILM PAINT

NEWPORT
REG. U.S. PAT. OFF.
"COAL TO DYESTUFF"

Newport Chemical Works
INCORPORATED
Passaic, New Jersey

Branch Offices and Warehouses
Boston, Mass. Chicago, Ill. Philadelphia, Pa.
Providence, R. I. Greensboro, N. C. Greenville, S. C.
Montreal, Can. Mexico City, D. F.

"WE"—Editorially Speaking

When Dr. Wiley was Chief of the old Bureau of Chemistry of the Department of Agriculture he appeared once before a congressional committee which was reviewing the matter of appropriations. Compared with some of the increases asked, his own budget for the Bureau of Chemistry was so modest that it attracted the attention of the committee and they began asking him questions leading up to an opinion. He skillfully avoided committing himself by repeating that he was a chemist not an agricultural expert.

At last one of the Senators asked him point blank: "Dr. Wiley, just what is your definition of an agricultural expert?"

"From what I have heard in this committee room, Senator, I am convinced that the best and most inclusive definition is: an agricultural expert is any one who can make two dollars grow on an appropriation bill where but one grew before."

All this happened 'way back before the War, so plainly the conclusions which Dr. Wiley sets forth, with flashes of that same caustic wit, in this issue are not based on any snap judgment.

Our Table of Contents this month has been rather sharply revised by the influenza. Two valued contributors, General Fries and J. M. Selden, Jr., whose articles we announced last month, have been ill. Both, we are glad to say, are recovered. In due course, their papers on Gas Warfare and Phthalic Anhydride will be put before you: but flu convalescence is slow and uncertain so neither they nor we make any more definite promise.

Writes an advertising manager: "What with the 'O. P. D.' going modern and adopting the admirable, alphabetical arrangement of price quotations which you introduced some ten years ago and with 'Chem & Met' going commercial and adopting your business subject-matter and your attractive style of headings and make-up, I am wondering if all the mergers are among chemical manufacturers. Why don't the names of Bill Haynes and Bill George appear on the mastheads of your esteemed contemporaries? Is it a secret combine, or are they rebating you secretly for your ideas?"

To which we hastened to reply: "Nothing of the sort! The only pay we have received is in that kind of flattery which the old proverb assures us is the most sincere. Absolutely!"

John M. Weiss makes a couple of very nice points in his article on "Financing Chemical Developments" which are quite as applicable to the established chemical maker planning to diversify his line by new items as they are to the promotion of brand new chemical enterprises. The "know-how", some apparatus that isn't being used, and a sales force that nobody believes is working a top speed are three very potent promoters of over-production in the chemical industry.

A wise old English statesman once said "I am an old man and I have had many troubles—but most of them never happened." We were quite concerned, and commented in deadly seriousness upon the significance of that recently organized investment trust with the chemical name. And now they have gone and bought controlling interest in a cleaning compound "manufacturer" who alternately buys T. S. P. from Mr. Johns, Mr. Chew, and Mr. Annin and then merchandises it under a name almost as trick as "May Morning." Well, well, after all these big Wall Street interests *are* constructive. If they would only effect a merger of 1483 metal polish mixers and 1705 rat poison concocters how much they would simplify the telephone red book listings under the cosmopolitan heading of "Chemical Manufacturers."

Back in those days when the bee was the only wax factory, Neanderthal man had little or no reason to worry about grades or adulteration. Being only an insect, the bee could not help but manufacture a standard product. In our day, however, when wax is defined as "substances, which, when near their melting points, are plastic solids, and have a characteristic unctuous feeling", grades and qualities have assumed an important role. Mr. Sanderson's discussion of wax is interesting in itself aside from its value to wax users. He concludes with a ghostly reference to adipocere, otherwise known as cadaver wax, which left us hoping that we would never meet this class of wax in a lonely spot on a dark night.

We are presenting our own "Mirrors of Washington" in our pages this month. Gossip about policies and personalities centered in that city is always interesting, as the author of that one-time "best seller" found to his profit. In Mr. Hallam's story of Hoover and prohibition and our version of the tariff hearings, we are relaying the "latest" from the halls of government.

Of all the rumors and explanations concerning Cyanamid's purchase of Calco, the one we like best is the one which attributes the transaction to a desire on the part of Cyanamid to get front-cover position in CHEMICAL MARKETS.

FREE TO SUBSCRIBERS

Complete indexes for Volumes XXII and XXIII—from January to June and from July to December, 1928—have been printed and will be mailed free to any regular subscriber upon application to CHEMICAL MARKETS, 25 Spruce St., New York City.

This additional service to subscribers is the result of many persistent requests for indexes to the magazine, and even readers who do not regularly save their back copies, want these condensed records of the chronicles of commercial chemistry to have on file for ready reference.

Events of 1909

The first pound of Liquid Chlorine produced in the U. S. A. 1907

Inauguration of Pres. Taft, March 4, 1909

Over 20 Years Ago E B G Pioneered in the Manufacture of Liquid Chlorine

BACK of every successful effort to lift industrial processes up the steps of progress is the initiative of the pioneer.

The process of bleaching was radically improved by the introduction of Liquid Chlorine. E B G was the first to manufacture this efficient bleaching agent on a commercial scale. It was in 1909, the year President Taft took office.

In the years that have elapsed since this important industrial development, E B G has perfected the size and scope of its facilities. The E B G organization has grown in experience and ability to properly service this important industrial ally.

Today, E B G offers the user of Liquid Chlorine features of value.

Liquid Chlorine

Electro Bleaching Gas Co.

PIONEER MANUFACTURERS of LIQUID CHLORINE

MAIN OFFICE:
9 East 41st Street
New York

PLANT:
Niagara Falls, N. Y.